

Archive ENERGY STAR Qualified Homes Policy Record

How to Use This Document

EPA regularly receives partner questions and comments regarding various aspects of the program documents. This document is a record of the issues that have been received since the release of the last revision to the program documents. These issues have been resolved, sometimes resulting in modifications that will be incorporated into the next revision of the program documents. The primary purpose of this document is to allow all partners to have equal access to the latest policy issues and resolutions.

For Version 2.5 and Version 3, EPA has formally incorporated policy modifications into the program documents. Those edits are enforced for homes permitted after a specified transition period, typically 60 days from the release of the revised guidelines. Partners may, at their discretion, use the determinations immediately at the time of their release, in advance of the formal implementation dates. If they do so, they should be sure to document the permit dates of the affected homes and to include a copy of the policy record in the files retained by the Home Energy Rater. Should the need arise, this will allow partners to demonstrate that they acted with the best information available.

Definitions

Each issue listed here is classified as a Change, Clarification, Refinement, or Comment. These are defined as follows:

- *Change* – The addition, deletion, or modification of a program requirement. A change will typically result from a partner question or feedback indicating that EPA's original intent is not being met or due to changes in relevant standards (e.g., ENERGY STAR labeled product requirements, NAECA standards, IECC codes). A change is the most significant type of edit for partners because it is likely to change the way that partners comply with the program.
- *Clarification* – The clarification of a program requirement, typically resulting from a partner question indicating confusion or ambiguity. Clarifications are not intended to significantly change the scope of the program guidelines, but rather to clarify the original intent of the requirement. A clarification is secondary in importance to a change; it should not significantly alter the way that most partners comply with the program.
- *Refinement* – A minor revision, such as an improved choice of words, a grammatical correction, or a correction to a typographical error. A refinement is the least important type of edit; it should have no impact on the way that partners comply with the program.
- *Comment* – A comment provided by EPA in response to a question, which results in no change to the program documents. This may occur, for example, if the question can be answered by referring to already established policy. Aside from the partner asking the question, such comments will typically have no impact on the way that partners comply with the program.

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ID	Log Date	Program Document	Classification	Topic
00001	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Change	Program eligibility– Harmonizing requirements with Multifamily High-Rise Program
				Issue: EPA has recently launched its ENERGY STAR Multifamily High Rise Program. The eligibility requirements of the ENERGY STAR for New Homes Program need to be harmonized with the eligibility requirements of that new program.
				<p>Resolution: The eligibility requirements on page one of the National Program Requirements will be revised as follows:</p> <p>“To earn the ENERGY STAR under the Version 3 Guidelines, homes must be one of the following:</p> <ul style="list-style-type: none"> • “Single family homes; OR • “Units in any multifamily building with 4 units or fewer; OR • “Units in multifamily buildings with 3 stories or fewer above-grade^{1,2}; OR • “Units in multifamily buildings with 4 or 5 stories above-grade^{1,2} that have their own heating, cooling, and hot water systems³, separate from other units, and where dwelling units occupy 80% or more of the occupiable² square footage of the building.⁴ When evaluating mixed–use buildings for eligibility, exclude commercial / retail space when assessing whether the 80% threshold has been met. <p>“Units in multifamily buildings that are not eligible for the ENERGY STAR through the New Homes program may be eligible to qualify through the Multifamily High Rise Program.</p> <p>The associated footnotes will be as follows:</p> <ol style="list-style-type: none"> 1. “Any above-grade story with 20% or more occupiable space, including commercial space, shall be counted towards the total number of stories for the purpose of determining eligibility to participate in the program. The definition of an ‘above-grade story’ is one for which more than half of the gross surface area of the exterior walls is above-grade. All below-grade stories, regardless of type, shall not be included when evaluating eligibility. 2. “Per ASHRAE 62.2-2010, occupiable space is any enclosed space inside the pressure boundary and intended for human activities or continual human occupancy, including, but not limited to, areas used for living, sleeping, dining, and cooking, toilets, closets, halls, storage and utility areas, and laundry areas. 3. “Central systems for domestic hot water are allowed if solar energy provides at least 50% of the domestic hot water needs for the residential units. 4. “Units in multifamily buildings with 4 or 5 stories above-grade, including mixed–use buildings, that have their own heating, cooling, and hot water systems, separate from other units, <u>but where dwelling units occupy less than 80%</u> of the residential (i.e., excluding commercial / retail space for mixed-use buildings) occupiable square footage

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				of the building may qualify for the ENERGY STAR through either the New Homes program or the Multifamily High Rise program if permitted prior to July 1, 2012. Units in buildings of this type that are permitted after this date shall only be eligible to earn the ENERGY STAR through the Multifamily High Rise (MFHR) program.”
00002	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Comment	Program eligibility– Access to thermostats in multifamily units
				Issue: One eligibility requirement for units in multifamily buildings with 4 or 5 stories above-grade is that they must have their own heating, cooling, and hot water systems, separate from other units. Partners have asked whether HVAC thermostats for these units and for multifamily units in general must be accessible to occupants, or if they can be accessible only to the property owner.
				Response: The program does not impose any requirements related to HVAC thermostat access. However, if a continuously-operating ventilation or exhaust fan is present, note that ASHRAE 62.2-2010 and Item 6.4 of the HVAC System Quality Installation Rater Checklist do require that override controls be readily accessible to the occupant.
00003	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Comment	Program eligibility – Qualifying existing homes
				Issue: Partners have asked if existing homes can earn the ENERGY STAR through renovations.
				Response: Existing homes can earn the ENERGY STAR, but they must fulfill all requirements; no requirements are waived.
00004	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Clarification	Prescriptive Path – Determining gross basement wall area
				Issue: Partners have expressed difficulty determining the percentage of gross basement wall area that is below grade when walls are not in contact with either the ground or outdoor ambient air. This occurs, for example, when a wall separates the basement spaces of adjacent townhome units.
				Response: EPA intended to exclude walls that are not in contact with either the ground or outdoor ambient air because of the difficulty of determining the area of the above-grade and below-grade portions of those walls. The beginning of Footnote 3 will be revised to read as follows: “To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above).”
00005	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Change	Prescriptive Path – Basement exclusion from Size Adjustment Factor
				Issue: Partners have asked EPA to allow bedrooms in basements to be included when determining the Benchmark Home Size. In the rare instances where the majority of bedrooms in a home are located in the basement, excluding these bedrooms can result in the application

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				<p>of a significant Size Adjustment Factor, resulting in a meaningfully more stringent ENERGY STAR HERS Index Target.</p> <p>Response: To eliminate this hardship for these homes, EPA will now allow all bedrooms in the home to be counted when determining the Benchmark Home Size, regardless of location. This policy change will result in the same or less stringent target for all Partners. Note that no change is being made to EPA's policy of excluding floor area in basements with at least half of the gross surface area of the exterior walls below grade. That is to say, floor area in basements with at least half of the gross surface area of the basement's exterior walls below grade shall not be counted when determining a home's Benchmark Home Size, Size Adjustment Factor, and eligibility to use the Prescriptive Path.</p> <p>The National Program Requirements will be revised as follows:</p> <p>"First, assess the eligibility to follow the Prescriptive Path by comparing the conditioned floor area (CFA) of the home to be built to the CFA of the Benchmark Home as specified in Exhibit 3. For the purposes of this step, calculate the number of bedrooms and the CFA of the home to be built using RESNET standards with the following exception: floor area in basements with at least half of the gross surface area of the basement's exterior walls below grade shall not be counted. If the CFA of the home to be built exceeds the CFA of the Benchmark Home, then the Performance Path shall be used.</p> <p>"To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above). Note that this change is only for the purpose of determining a home's Benchmark Home Size, Size Adjustment Factor, and eligibility to use the Prescriptive Path. The full conditioned floor area, per RESNET's standards, should be used when rating the home (e.g., determining compliance with duct leakage requirements).</p> <p>"If a home has zero bedrooms with regard to the Benchmark Home Size determination, then the Benchmark Home Size for one bedroom shall be used."</p>
00006	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Comment	Prescriptive Path – Lack of availability of right-sized equipment with required efficiency
				Issue: Partners have asked what to do when there are no HVAC equipment models available that meet both the right-sizing and efficiency requirements of the Prescriptive Path.
				Resolution: All homes qualified under the Prescriptive Path must use equipment that meets both the prescriptive efficiency levels defined in the ENERGY STAR Reference Design and the right-sizing requirements of the HVAC System Quality Installation Contractor Checklist. If both requirements could not be met, then the home would need to pursue qualification using the Performance Path instead, where lower equipment efficiency is permitted. EPA may consider developing an additional prescriptive path option in the future to accommodate small homes, which benefit less from high-efficiency HVAC systems.

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00007	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Refinement	Prescriptive Path – Errata
				<p>Issue: EPA has identified a minor typographical error in Step 1 of the Prescriptive Path in the National Program Requirements: “First, assess the eligibility to follow the Prescriptive Path by comparing the conditioned floor area (CFA) of the home to [be] built to the CFA of the Benchmark Home as specified in Exhibit 3.”</p> <p>Resolution: Step 1 of the Prescriptive Path will be revised as follows: “First, assess the eligibility to follow the Prescriptive Path by comparing the conditioned floor area (CFA) of the home to be built to the CFA of the Benchmark Home as specified in Exhibit 3.”</p>
00009	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Comment	Performance Path – Modeling uncommon technologies
				<p>Issue: Partners have asked how to model less common technologies when calculating a home’s HERS Index (e.g., wood fired boilers, drain water heat recovery, evaporative coolers).</p> <p>Response: For partners that wish to use innovative technologies to improve the HERS index (e.g., to meet the ENERGY STAR HERS Index Target), EPA recommends that they submit an Innovative Design Request (IDR) to the RESNET Technical Subcommittee.</p> <p>In contrast, for partners that wish to use an innovative technology for a purpose other than to improve the HERS index (e.g., an alternate approach to meeting a detail on one of the inspection checklists), the partner shall first consult their Rater. In the event that a Rater is not able to determine whether the approach is consistent with the intent then the Rater shall consult their Provider. If the Provider also cannot make this determination, then the Rater or Provider shall report the issue to EPA prior to project completion at: energystarhomes@energystar.gov.</p>
00104	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Clarification	Performance Path - Conflicts with code or other external guidelines
				<p>Issue: Partners have asked if Inspection Checklist requirements that are not included in a home because of a conflict with building codes should be included when determining if the home’s HERS Index is less than or equal to its ENERGY STAR HERS Index Target. For example, if a home is required to have slab edge insulation per Item 4.2 of the Thermal Enclosure System Rater Checklist, but slab edge insulation is prohibited by code, should the home be modeled with the missing insulation?</p> <p>Resolution: If a conflict with code or other external guidelines prevents a home from including an energy efficiency feature required by the Inspection Checklists, that feature cannot be used to help the home meet its ENERGY STAR HERS Index Target under the Performance Path. If modeling the home as it will be built, without the efficiency feature, causes it to fail then additional upgrades must be used to compensate for the missing feature. To clarify this, Footnote 5 will be revised as follows:</p> <p>a. “In cases where the overlapping requirements exceed the ENERGY STAR guidelines,</p>

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				<p>these overlapping requirements shall be met;</p> <p>“In cases where overlapping requirements conflict with a requirement of these ENERGY STAR guidelines (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these guidelines shall not be met. Qualification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement of these ENERGY STAR guidelines (e.g., switching from exterior to interior slab edge insulation). Note that, under the Performance Path, a home must still meet its ENERGY STAR HERS Index Target. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement.”</p>
00010	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Comment	<p>Performance Path – Requirement to use compact fluorescent lights</p> <p>Issue: Partners have asked if there is a minimum requirement for installing compact fluorescent lights (CFLs) to qualify a home under the Performance Path of ENERGY STAR Version 2.5 and Version 3.</p> <p>Resolution: When using the Performance Path to qualify a home under Version 2.5 or Version 3, there is no minimum requirement for CFL installation. However, the home must meet the ENERGY STAR HERS Index Target, which is calculated using a reference design home with 80% efficient lighting as described in the Expanded ENERGY STAR Reference Design Definition. Therefore, if the percentage of CFLs in the home is lower than the percentage of CFLs in the Reference Design Definition, the home will likely need other efficiency improvements to achieve the HERS Index Target required for qualification.</p>
00011	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Comment	<p>Performance Path – Determining dishwasher efficiencies</p> <p>Issue: Partners have asked how to find the Energy Factor (EF) of a dishwasher in order to model it under the Performance Path.</p> <p>Resolution: If an ENERGY STAR qualified dishwasher is installed and the model number is known, then the EF of the dishwasher can be found in the Qualified Product List on the ENERGY STAR qualified products website at the following link: http://www.energystar.gov/index.cfm?fuseaction=dishwash.search_dishwashers. If the EF cannot be determined from the Qualified Products List, the Rater should follow the guidance on minimum rated features provided in the RESNET 2006 Mortgage Industry National Home Energy Rating Standard, available at the following link: http://www.resnet.us/standards.</p>
00097	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Clarification	<p>Partnership, Training, and Credentialing Requirements</p> <p>Issue: Partners have asked for clarification about the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes.</p>

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				<p>Resolution: A section will be added to clarify the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes. This new section will appear after the “ENERGY STAR Performance Path” section and read as follows:</p> <p>“Partnership, Training, and Credentialing Requirements</p> <p>Builders, Raters, and HVAC contractors must meet the following requirements prior to qualifying homes under these guidelines:</p> <ul style="list-style-type: none"> • Builders are required to be ENERGY STAR partners and complete the online Version 3 Builder Orientation. Partnership Agreements and Version 3 Builder Orientation can be found at www.energystar.gov/homesPA. • HVAC contractors must be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO). An explanation of this process and links to H-QUITOs can be found at www.energystar.gov/newhomesHVAC. <p>Raters and Field Inspectors are required to complete Version 3 Training which can be found at www.resnet.us/energystar.”</p>
00098	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Comment	<p>Prescriptive & Performance Path - Dual-fuel air-source heat pump efficiency requirements</p>
				<p>Issue: Partners have asked what minimum efficiency requirements must be met when installing a dual-fuel air-source heat pump.</p>
				<p>Resolution: If a home is earning the ENERGY STAR using the Prescriptive Path and a dual-fuel air-source heat pump heating system is being installed in the home, the heat pump must meet the minimum efficiency requirements specified in Exhibit 1. Additionally, the dual-fuel backup component must be ENERGY STAR qualified.</p> <p>If the home is earning the ENERGY STAR using the Performance Path, there is no minimum efficiency level that the HVAC equipment must meet. However, if an HVAC system is installed with an efficiency level lower than that specified by Exhibit 1, then other efficiency upgrades may be needed in order to achieve the ENERGY STAR HERS Index Target that must be met for the home to earn the ENERGY STAR.</p>
00099	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Clarification	<p>Prescriptive Path – Required efficiency of gas furnaces</p>
				<p>Issue: The minimum efficiency requirements for ENERGY STAR qualified gas furnaces manufactured after 02/01/2012 will increase from 90 AFUE to 95 AFUE for the U.S. North region, defined as states with population-weighted Heating Degree Days ≥ 5000. The ENERGY STAR Product Specification for Furnaces, Version 3.0, specifies which states are included in the U.S. North region.</p> <p>The ENERGY STAR Reference Design defined in Exhibit 1 currently requires an ENERGY</p>

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				<p>STAR qualified 90 AFUE furnace in Climate Zones 4 through 8. Partners have asked how this will be modified to account for the new ENERGY STAR product specification for furnaces.</p> <p>Resolution: The ENERGY STAR for Homes guidelines will not be modified at this time to align with the more stringent efficiency level required in the new ENERGY STAR product specification for furnaces. The minimum efficiency level specified for gas furnaces in Climate Zones 4 through 8 under the Prescriptive Path and Exhibit 2 of the ENERGY STAR HERS Index Target Procedure will remain at 90 AFUE. The minimum requirement for gas furnaces in Climate Zones 4 through 8 in Exhibit 1 of the National Program Requirements will be revised by removing the phrase “ENERGY STAR qualified”.</p>
00100	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Change	<p>Prescriptive Path - Total duct leakage limits</p> <p>Issue: Partners have expressed difficulty meeting the total duct leakage limit for homes with at least 1,200 sq. ft. of conditioned floor area (i.e., 6 CFM25 per 100 sq. ft. of conditioned floor area). Partners have provided feedback that this threshold is most challenging to achieve where building cavities are used as ducts and where ducts and air handlers are not completely sealed with mastic. For fully ducted and sealed systems, partners have indicated that they can consistently approach the threshold but that meaningfully more effort is required to move from just above the threshold (e.g., 8 CFM25 per 100 sq. ft. of conditioned floor area) to the threshold of 6 CFM25 per 100 sq. ft. of conditioned floor area.</p> <p>Resolution: To address partners’ difficulties meeting the total duct leakage limit, the total duct leakage limit will be revised as follows: “Total duct leakage shall be \leq 8 CFM25 per 100 sq. ft. of conditioned area.” Because the total duct leakage threshold will not be changed for homes with less than 1,200 sq. ft. of conditioned floor area, there will no longer be a different threshold for those homes.</p> <p>Footnote 24 will be shortened to only include guidance related to duct leakage testing protocols: “Duct leakage shall be determined and documented by a Rater using a RESNET-approved testing protocol only after all components of the system have been installed (e.g., air handler and register grilles). Leakage limits shall be assessed on a per-system, rather than per-home, basis.”</p> <p>Remaining guidance related to testing duct leakage to the outside has been will be consolidated in Footnote 25, which will read as follows:</p> <p>“For homes that have \leq 1,200 sq. ft. of conditioned floor area, measured duct leakage to outdoors shall be \leq 5 CFM25 per 100 sq. ft. of conditioned floor area. Testing of duct leakage to the outside can be waived if all ducts & air handling equipment are located within the home’s air and thermal barriers AND envelope leakage has been tested to be less than or equal to half of the Prescriptive Path infiltration limit for the Climate Zone where the home is to be built. Alternatively, testing of duct leakage to the outside can be waived if total duct leakage is \leq 4 CFM25 per 100 sq. ft. of conditioned floor area, or \leq 5 CFM25 per 100 sq. ft. of conditioned</p>

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				floor area for homes that have less than 1,200 sq. ft. of conditioned floor area.”
00101	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Comment	Prescriptive Path – Minimum water heater efficiency requirements
				Issue: Partners have asked if, when a solar water heater is used as the primary water heating system and an electric or gas system is used as a backup system under the Prescriptive Path, both the primary and backup systems must meet the required minimum efficiency levels.
				Resolution: When qualifying a home under the Prescriptive Path, all water heating systems, including backup systems, must meet the minimum efficiency requirements.
00102	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Refinement	Prescriptive Path – ENERGY STAR qualified lighting
				Issue: The terminology related to ENERGY STAR qualified light bulbs has changed such that partners looking for ENERGY STAR qualified CFLs, LEDs, or pin-based lighting should now look for ENERGY STAR qualified light bulbs or fixtures.
				Resolution: To align terminology across programs, and to encourage partners to use ENERGY STAR qualified light fixtures in addition to qualified light bulbs, the Lighting & Appliances section will be revised to read in part: “ENERGY STAR qualified light bulbs or fixtures shall be installed in 80% of RESNET-defined Qualifying Light Fixture Locations.”
00012	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Clarification	Exhibit 4, Footnote 2 – Definition of permit dates
				Issue: Partners have asked if Providers can assign deemed permit dates to a home when they cannot determine either the permit date or the date of the contract.
				Response: EPA’s policy is that the permit or contract date determines the version of the ENERGY STAR guidelines a home is eligible to be qualified under. EPA believes that one of these two dates should generally be available. However, in cases where the permit date or contract date is not available, Providers have discretion to estimate the permit date based on other construction schedule factors. These assumptions should be both defensible and documented. Footnote 2 will be revised to read as follows: “The Rater may define the ‘permit date’ as either the date that the permit was issued or the date of the contract on the home. In cases where permit or contract dates are not available, Providers have discretion to estimate permit dates based on other construction schedule factors. These assumptions should be both defensible and documented.”
00013	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Clarification	Exhibit 4, Footnote 3 – Timeline for low-income projects
				Issue: Partners have asked EPA to clarify several aspects of the extended Version 2 timeline for low-income projects financed through low-income housing agencies, including the following: <ul style="list-style-type: none"> • What kind of organization qualifies as a “low-income housing agency”? • What kind of financial support qualifies as “funding”?

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				<ul style="list-style-type: none"> How should builders and developers document when funding applications are received by funding agencies? What is the overall intent of the extended Version 2 timeline for this kind of project? <p>Response: By "low-income housing agency," EPA means any entity that provides public funding to nonprofit builders and developers for the construction of housing projects specifically for low-income tenants.</p> <p>By "funding," EPA means public funding such as public grants or Low Income Housing Tax Credit (LIHTC) funds. The funding must be critical to the project financing, such as financing land acquisition, infrastructure, or construction. Funding intended for noncritical activities, such as for providing mortgage financing to homebuyers, does not qualify for the extended timeline.</p> <p>It is the responsibility of the funding applicant (the developer and builder) to keep on file written proof that they applied for public funds for use in constructing a low-income housing project to be ENERGY STAR qualified under Version 2. This documentation should identify the funding agency and the date when the funding application was received by the funding agency. This could be a copy of the funding application itself that has been date stamped by the funding agency. If there is no documentation that indicates when the funding application was received by the funding agency, there should at least be documentation that indicates when the funding application was sent to the funding agency by the funding applicant. It is the responsibility of the developer and builder to make this documentation available to the Rater (as well as to EPA upon request) so the Rater can verify whether or not the housing project qualifies for this exemption to the national Version 3 implementation timeline. Also, the builder or developer is responsible for providing to the Rater (as well as EPA upon request) a copy of documentation that shows that the funding was awarded prior to completion of the housing project.</p> <p>The intent of the low-income housing exemption to the national Version 3 implementation timeline is to give nonprofit low-income housing builders and developers additional time to build homes to earn the ENERGY STAR label under Version 2 with the understanding that low-income housing projects typically require some form of public funding in order to be constructed and that the process for obtaining public funding typically adds time to the build-out timeline. EPA decided to provide this exemption based on when the funding application was received as opposed to when the application was approved or when funding was actually received in order to avoid penalizing nonprofit low-income housing developers and builders for delays caused by the funding agency in reviewing and approving funding applications.</p>
00103	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Comment	<p>Exhibit 4 – Implementation timeline for projects funded through multiple low-income housing agencies</p> <p>Issue: Partners have asked if, when a low-income project is financed through several low-income housing agencies, each one of the agencies must receive the application for funding prior to April 1st, 2011 for the project to be eligible to earn the ENERGY STAR under Version 2 of the guidelines.</p>

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				<p>Resolution: If at least one of the low-income housing agencies received the application for funding by April 1st, 2011, then the project is eligible to earn the ENERGY STAR under the Version 2 guidelines until January 1, 2013.</p>
00014	07/25/2011	National Program Requirements (Version 3, Rev. 03)	Refinement	<p>Footnote 8 – Slab framing systems</p>
				<p>Issue: Partners have asked EPA to define the phrase “slab framing system” in Footnote 8.</p>
				<p>Response: Footnote 8 will be revised to read as follows: “Insulation shall be verified by a Rater to achieve Grade I installation as defined in the RESNET Standards, except for ceiling, wall, and floor assemblies with continuous rigid insulation sheathing. For such homes, Grade II installation is acceptable for the cavity insulation only if the rigid insulation sheathing meets or exceeds the following levels: R-3 in Climate Zones 1 to 4; R-5 in Zones 5 to 8.”</p>
00105	01/15/2012	National Program Requirements (Version 3, Rev. 04)	Clarification	<p>Footnote 10d – Minimum insulation requirements when using a total UA calculation</p>
				<p>Issue: Partners have asked whether the insulation requirements specified in Item 4.1 of the Thermal Enclosure System Rater Checklist apply to the attic edge only or the entire attic, noting that Footnote 10d states, in part, that “while ceiling and slab insulation can be included in trade-off calculations, the R-value must meet or exceed the minimum values listed in Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist to provide an effective thermal break, regardless of the UA tradeoffs calculated.”</p>
				<p>Resolution: To clarify that Inspection Checklist Item 4.1 defines minimum insulation levels that must be achieved specifically at the interior face of the exterior wall and not throughout the attic, Footnote 10d will be revised as follows: “...Also, note that while ceiling and slab insulation can be included in trade-off calculations, Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist shall be met regardless of the UA tradeoffs calculated...”</p>
00015	07/25/2011	Inspection Checklists (Version 3, Rev. 03)	Clarification	<p>Verification by Rating Field Inspectors</p>
				<p>Issue: Partners have asked if Rating Field Inspectors are permitted to verify items on the Inspection Checklists and, if so, whether there are any restrictions on the items that they can verify.</p>
				<p>Resolution: Rating Field Inspectors are allowed to verify any item on the ENERGY STAR Inspection Checklists that Raters are allowed to verify. Through RESNET, Home Energy Raters and Rating Field Inspectors receive equivalent training with regards to field inspections. Therefore, they are both qualified to verify items on the Inspection Checklists.</p> <p>Footnote 2 of the Inspection Checklist cover page will be revised as follows:</p> <p>“The term ‘Rater’ refers to the person completing the third-party inspections required for qualification. This party may be a certified Home Energy Rater, a certified Rating Field Inspector, BOP Inspector, or an equivalent designation as determined by a Verification Oversight Organization such as RESNET.”</p>

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00106	01/15/2012	Inspection Checklists (Version 3, Rev. 04)	Clarification	Conflicts with code or other external guidelines
				<p>Issue: Partners have asked if Inspection Checklist requirements that are not included in a home because of a conflict with building codes should be included when determining if the home's HERS Index is less than or equal to its ENERGY STAR HERS Index Target. For example, if a home is required to have slab edge insulation per Item 4.2 of the Thermal Enclosure System Rater Checklist, but slab edge insulation is prohibited by code, should the home be modeled with the missing insulation?</p> <p>Resolution: If a conflict with code or other external guidelines prevents a home from including an energy efficiency feature required by the Inspection Checklists, that feature cannot be used to help the home meet its ENERGY STAR HERS Index Target under the Performance Path. If modeling the home as it will be built, without the efficiency feature, causes it to fail, then additional upgrades must be used to compensate for the missing feature.</p> <p>The first page of the Inspection Checklists describes how conflicts with code requirements or other guidance are to be handled and will be revised to ensure consistent implementation among partners. The revised guidance will read:</p> <p>"Where requirements of the local codes, manufacturers' installation instructions, engineering documents, or regional ENERGY STAR programs overlap with the requirements of these guidelines, EPA offers the following guidance:</p> <ul style="list-style-type: none"> a. "In cases where the overlapping requirements exceed the ENERGY STAR guidelines, these overlapping requirements shall be met; b. "In cases where overlapping requirements conflict with a requirement of these ENERGY STAR guidelines (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these guidelines shall not be met. Qualification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement of these ENERGY STAR guidelines (e.g., switching from exterior to interior slab edge insulation). Note that, under the Performance Path, a home must still meet its ENERGY STAR HERS Index Target (or equivalent target for regional program requirements). Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement."
00016	07/25/2011	Inspection Checklists (Version 3, Rev. 03)	Change	Sampling verification of Inspection Checklists
				<p>Issue: Partners have asked EPA to clarify how the HVAC System Quality Installation Contractor Checklist and Water Management System Builder Checklist can be sampled using a RESNET-approved protocol given that RESNET does not provide oversight of builders or HVAC contractors.</p> <p>Response: EPA will revise the first page of the Inspection Checklists to require that the HVAC</p>

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				<p>System Quality Installation Contractor Checklist and Water Management System Builder Checklist be completed for each qualified home. EPA will make this change for several reasons.</p> <p>First, there is no effective oversight protocol or infrastructure available to provide sampling of these checklists. RESNET does not provide oversight to the work of builders or HVAC contractors.</p> <p>Second, sampling was conceived as a means to streamline the process by which Raters verify that program requirements have been completed by the builder. That is to say, all homes must meet the program requirements, but verification of compliance is not required for every home if the sampling prerequisites have been met.</p> <p>In contrast, with the HVAC System Quality Installation Contractor Checklist and Water Management System Builder Checklist, the person completing the work is permitted to be the same person verifying the work. For example, the HVAC technician that is installing and commissioning a split system AC unit is permitted to complete the relevant portions of the HVAC System Quality Installation Contractor Checklist. The same logic extends to the builder checklist. Therefore, no additional site visits should be required to complete these two Inspection Checklists. In fact, they can be completed by the person doing the work at the time that the work is done.</p> <p>For these two reasons, EPA will be removing the allowance to use a RESNET-approved sampling protocol to complete the HVAC System Quality Installation Contractor Checklist and Water Management System Builder Checklist. Sampling shall still be permitted for the Thermal Enclosure System Rater Checklist and for the HVAC System Quality Installation Rater Checklist.</p> <p>The description of the use of sampling on the first page of the Inspection Checklists will be revised as follows: "The Thermal Enclosure System Rater Checklist and the HVAC System Quality Installation Rater Checklist shall be permitted to be completed for a batch of homes using a RESNET-approved sampling protocol to qualify homes as ENERGY STAR. For example, if the approved sampling protocol requires rating one in seven homes, then these two checklists shall be permitted to be completed for the one required rating. Sampling shall not be used for the HVAC System Quality Installation Contractor Checklist or the Water Management System Builder Checklist. Instead, these two checklists must be completed for each qualified home."</p>
00107	01/15/2012	Inspection Checklists (Version 3, Rev. 04)	Comment	Definition of Applicable Sampling Protocol
				Issue: Partners have asked if Chapter 6 of RESNET's Mortgage Industry National Home Energy Rating System Standards still defines the protocols that must be followed to qualify homes through sampling under Version 3.
				Resolution: The sampling protocols described in Chapter 6 of RESNET's Mortgage Industry National Home Energy Rating System Standards must be followed if sampling is used to

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				qualify homes. Note that the use of sampling is not permitted for the HVAC System Quality Installation Contractor Checklist or the Water Management System Builder Checklist.
00108	01/15/2012	Inspection Checklists (Version 3, Rev. 04)	Clarification	Verifying HVAC contractor credentials
				Issue: Partners have asked how Raters can verify that an HVAC contractor holds credentials necessary to complete the HVAC System Quality Installation Contractor Checklist, per the requirement on page 1 of the Inspection Checklists.
				Resolution: Raters can verify the credentialed status of an HVAC contractor using the EPA-maintained list of recognized HVAC credentialing organizations at www.energystar.gov/newhomeshvac . A new footnote will be added to the Inspection Checklists that reads: "HVAC contractors must be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO). An explanation of this credentialing process and links to H-QUITOs, which maintain lists of credentialed contractors, can be found at www.energystar.gov/newhomesHVAC ."
00018	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Section 1 – Applicability of requirements to historic buildings
				Issue: Partners have asked if historic buildings being renovated must comply with Items 1.1 and 1.2 or if exceptions will be made similar to those in Item 101.4.2 of the 2009 IECC.
				Resolution: Historically, EPA has allowed retrofit projects to earn the ENERGY STAR if all requirements have been met. This policy has not changed. Retrofits must meet all requirements of the guidelines to earn the ENERGY STAR.
00109	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Item 1.2 – Minimum allowed performance for fenestration
				Issue: Partners have asked if windows that do not comply with Item 1.2 may be used as long as the total building thermal envelope UA meets the requirements of the 2009 IECC.
				Resolution: This Checklist promotes high-performance thermal enclosure systems in part by limiting the extent to which components can be downgraded when using trade-offs. Because windows typically have high U-factors compared to insulated walls, they are especially prone to compromising the thermal enclosure system. Homes qualified under the Performance Path are required to have a fenestration package that meets or exceeds the component U-factor and SHGC requirements specified in the 2009 IECC Table 402.1.1. Footnote 2 of the Checklist describes several exceptions to these requirements, however. The following exceptions relate to fenestration U-factors: "a) An area-weighted average of fenestration products shall be permitted to satisfy the U-factor requirements; "c) 15 square feet of glazed fenestration per dwelling unit shall be exempt from the U-factor and SHGC requirements, and shall be excluded from area-weighted averages calculated using

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				<p>a) and b) above;"</p> <p>Using this provision, the U-factors of different fenestration products may be averaged to meet 2009 IECC requirements, but fenestration characteristics may not be traded off with other components of the building envelope.</p> <p>Homes qualified under the Prescriptive Path are required to have a fenestration package that meets or exceeds ENERGY STAR requirements, which are more rigorous than the requirements of the 2009 IECC.</p>
00019	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	<p>Section 2 – Use of bagged batts to meet quality installed insulation requirements</p> <p>Issue: Partners have asked whether bagged batts (fiberglass batts encapsulated in perforated plastic) are acceptable for insulating basement and crawlspace walls.</p> <p>Resolution: From a thermal perspective, this section does not impose any restrictions on using bagged batts. Note though that Item 1.6 of the Water Management System Builder Checklist requires that class 1 vapor retarders not be installed on the interior side of air permeable insulation in exterior below-grade walls. As long as the plastic used is not a class 1 vapor retarder, then the bagged batts are permitted to be used. Reference Footnote 6 of the Water Management System Builder Checklist for further information on class 1 vapor retarders.</p>
				<p>Section 2 – Options to meet floor insulation requirements in space-constrained cavities</p> <p>Issue: Partners have asked how to meet the floor insulation requirements when space constraints exist, such as ductwork located in the floor cavity. Partners have also asked whether the insulation on the ductwork is permitted to contribute to the required floor insulation.</p> <p>Resolution: The R-value of floor insulation can be reduced in cavities where space constraints exist, such as ductwork located in the floor cavity. However, an alternative equivalent U-factor or total UA calculation shall be used to demonstrate compliance with Item 2.1, the insulation installation shall be Grade I (or Grade II for surfaces with insulated sheathing), and an air barrier shall be fully aligned with the insulation at the interior surface of the floor, including supports to ensure permanent contact and blocking at exposed edges. The insulation on the ductwork is permitted to be accounted for when determining compliance with the item.</p>
				<p>Item 2.1 – Allowance of partially uninsulated assemblies</p> <p>Issue: Partners have asked if some areas of ceiling, wall, or floor assemblies could be left uninsulated as long as the total UA met the 2009 IECC requirements.</p> <p>Resolution: The intent of Item 2.1 is to ensure that the overall thermal envelope of the home meets or exceeds the insulation level requirements of the 2009 IECC, as demonstrated by using the prescriptive R-values, an alternative equivalent U-factor calculation, or an alternative equivalent total UA calculation. Therefore, it is possible for homes with partially uninsulated assemblies to meet the intent of this item.</p>
00020	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	<p>Section 2 – Options to meet floor insulation requirements in space-constrained cavities</p> <p>Issue: Partners have asked how to meet the floor insulation requirements when space constraints exist, such as ductwork located in the floor cavity. Partners have also asked whether the insulation on the ductwork is permitted to contribute to the required floor insulation.</p> <p>Resolution: The R-value of floor insulation can be reduced in cavities where space constraints exist, such as ductwork located in the floor cavity. However, an alternative equivalent U-factor or total UA calculation shall be used to demonstrate compliance with Item 2.1, the insulation installation shall be Grade I (or Grade II for surfaces with insulated sheathing), and an air barrier shall be fully aligned with the insulation at the interior surface of the floor, including supports to ensure permanent contact and blocking at exposed edges. The insulation on the ductwork is permitted to be accounted for when determining compliance with the item.</p>
00021	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	<p>Item 2.1 – Allowance of partially uninsulated assemblies</p> <p>Issue: Partners have asked if some areas of ceiling, wall, or floor assemblies could be left uninsulated as long as the total UA met the 2009 IECC requirements.</p> <p>Resolution: The intent of Item 2.1 is to ensure that the overall thermal envelope of the home meets or exceeds the insulation level requirements of the 2009 IECC, as demonstrated by using the prescriptive R-values, an alternative equivalent U-factor calculation, or an alternative equivalent total UA calculation. Therefore, it is possible for homes with partially uninsulated assemblies to meet the intent of this item.</p>

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				<p>However, note that the intent of Section 4 of this checklist is to reduce thermal bridging. It imposes minimum insulation levels for several areas of the thermal envelope and reduced thermal bridging requirements for above-grade walls separating conditioned from unconditioned space. These requirements must also be met for every qualified home.</p> <p>Therefore, while Version 3 does not explicitly require that all areas of the thermal enclosure be insulated to qualify the home, the builder must meet the requirements of Item 2.1 and Section 4. Furthermore, EPA recommends, but does not require, that all areas of the thermal enclosure be insulated to help minimize thermal bypasses and improve occupant comfort.</p>
00110	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Change	<p>Item 2.1 – Insulation level tradeoffs for low infiltration rates</p> <p>Issue: Several partners have noted that they use advanced construction practices and materials that result in infiltration rates significantly below the ENERGY STAR Reference Design values. Because reduced infiltration rates can improve the thermal enclosure system by reducing convective gains and losses, partners have asked whether such techniques are permitted to be used in exchange for insulation levels less than those required by Item 2.1</p> <p>Resolution: Item 2.1 is intended to ensure that every qualified home includes a complete thermal enclosure system with improved performance relative to standard practice. Partners now have an additional option to meet the intent of Item 2.1 by achieving meaningful reductions in infiltration relative to the ENERGY STAR Reference Design in exchange for meeting less stringent insulation requirements. Homes that achieve $\leq 50\%$ of the infiltration rate defined for their Climate Zone in Exhibit 1 of the National Program Requirements are permitted to use insulation levels below the 2009 IECC requirements, with some limitations. Item 2.1 will be revised as follows:</p> <p>“Ceiling, wall, floor, and slab insulation levels shall comply with one of the following options:</p> <p>“2.1.1 Meet or exceed 2009 IECC levels OR;</p> <p>“2.1.2 Achieve $\leq 133\%$ of the total UA resulting from the U-factors in 2009 IECC Table 402.1.3, excluding fenestration and per guidance in Footnote 3d, AND home shall achieve $\leq 50\%$ of the infiltration rate in Exhibit 1 of the National Program Requirements.”</p>
00022	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Change	<p>Footnote 3 – Insulation levels for steel-frame assemblies</p> <p>Issue: Partners have advised that the checklist references erroneous guidance contained in the 2009 IECC related to the UA calculation for a steel-frame envelope assembly. Additionally, EPA has identified a minor typographical error in Footnote 3d. The footnote refers to the American Society of Heating, Refrigeration, and Air-Conditioning Engineers as “AHRAE”.</p> <p>Resolution: Footnote 3d has been revised to read as follows: “...The calculation for a steel-frame envelope assembly shall use the ASHRAE zone method or a method providing equivalent results, and not a series-parallel path calculation method.”</p>

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00023	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Footnote 3 – Methods for demonstrating compliance with insulation requirements
				Issue: Partners have asked for guidance about the three options available for demonstrating compliance with Item 2.1.
				<p>Resolution: Item 2.1 requires that ceiling, wall, floor, and slab insulation levels meet or exceed the 2009 IECC. There are three different ways to demonstrate compliance with this requirement:</p> <ol style="list-style-type: none"> 1. Use the prescriptive R-values in Table 402.1.1 of the 2009 IECC. 2. Use an alternative equivalent U-factor calculation. This approach accounts for all components in the assembly, such as drywall thickness, framing fraction, cavity insulation, and sheathing. Strategies such as increasing the framing spacing, adding insulated sheathing, and increasing the drywall thickness can all be used towards meeting the assembly U-factor. An assembly with a U-factor equal or less than specified in Table 402.1.3 of the 2009 IECC complies, even if the cavity insulation is less than the prescriptive values in option 1. 3. Use an alternative equivalent total UA calculation. This approach is similar to option 2, but allows insulation to be traded off among assemblies (e.g., insulation can be moved from the walls to the ceiling or from the ceiling to the floor). This may result in a home where the insulation in one assembly is less than the prescriptive value while another assembly has more than the prescriptive value (e.g., the wall may have less than R-20 cavity insulation, while the ceiling has more than R-38). A total building thermal envelope UA that is less than or equal to the total UA resulting from the U-factors in Table 402.1.3 complies. <p>The insulation levels of all non-fenestration components (i.e., ceilings, walls, floors, and slabs) can be traded off using the UA approach. Note that fenestration products (i.e., windows, skylights, doors) shall not be included in this calculation. Also, note that while ceiling and slab insulation can be included in trade-off calculations, the R-value must meet or exceed the minimum values listed in items 4.1 through 4.3 of the checklist to provide an effective thermal break, regardless of the UA tradeoffs calculated.</p> <p>Any of these three options may be used to demonstrate compliance with Item 2.1. Note that there is a simulated performance alternative in the 2009 IECC code, Section 405, that allows one to reduce insulation in exchange for tighter ducts, less infiltration, etc. This is <u>not</u> one of the options available to demonstrate compliance with Item 2.1.</p>
00127	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Refinement	Footnote 5 – Correction to hyperlink
				Issue: Partners have noted that the hyperlink and text for the website that provides a list of currently exempt details for slab edge insulation needs to be corrected.
				Resolution: Both the hyperlink and the text for the website that provides a list of currently

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				exempt details for slab edge insulation will be corrected to “www.energystar.gov/slabeledge.”
00024	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Item 2.2 & Item 4.4.1 – Request to use reflective insulation products to create a thermal break
				Issue: Partners have asked for permission to use radiant barrier house wrap as reflective insulation in place of the insulated sheathing and siding options referenced in Item 2.2 and Item 4.4.1.
				Resolution: Radiant barrier house wrap does not satisfy the insulated sheathing and siding options referenced in Item 2.2 and Item 4.4.1. The R-4 value noted in one product’s specifications provided by a partner is dependent upon a 0.375 inch airspace, which is not integral to the product. Additionally, these products are typically classified by the ICC Evaluation Service as weather barriers as opposed to insulation products.
00025	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Change	Section 3 – Attic kneewalls, skylight shafts, and sloped attics
				Issue: Partners have noted that attic knee walls and sloped attics, which may require very different strategies for aligning the air barrier and insulation, are grouped together in Item 3.1.3. They suggested that attic knee walls may be more logically grouped with skylight shaft walls in Item 3.1.4. Additionally, partners have continued to ask for clarification about the air barrier requirements for sloped surfaces. The terms “sloped ceilings” and “sloped attics” were introduced with Revision 02 to help clarify the requirements for air barriers, but have not achieved EPA’s goal of improving clarity.
				Response: To simplify definitions, Footnote 11 will be revised as follows: “All insulated vertical surfaces are considered walls (e.g., exterior walls, knee walls) and must meet the air barrier requirements for walls. All insulated ceiling surfaces, regardless of slope (e.g., cathedral ceilings, tray ceilings, conditioned attic roof decks, flat ceilings, sloped ceilings), must meet the requirements for ceilings.” The terms “sloped ceilings” and “sloped attics” will be removed from the program documents, as they are no longer needed. Item 3.1.3 will be simplified from “Attic knee walls / sloped attics” to “Attic knee walls”. The introductory block of Section 3 will be revised as follows: “At each insulated location noted below, a complete air barrier shall be provided that is fully aligned with the insulation as follows: <ul style="list-style-type: none"> • “At interior or exterior surface of ceilings in Climate Zones 1-3; at interior surface of ceilings in Climate Zones 4-8. Also, include barrier at interior edge of attic eave in all climate zones using a wind baffle that extends to the full height of the insulation. Include a baffle in every bay or a tabbed baffle in each bay with a soffit vent that will also prevent wind washing of insulation in adjacent bays • “At exterior surface of walls in all climate zones; and also at interior surface of walls for

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				<p>Climate Zones 4-8</p> <ul style="list-style-type: none"> “At interior surface of floors in all climate zones, including supports to ensure permanent contact and blocking at exposed edge.”
00026	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Section 3 – Sealing requirements for drywall used as an air barrier
				Issue: Partners have asked about the correct installation of drywall and other rigid sheathing products for use as an interior air barrier.
				Resolution: Per Footnote 6, “For purposes of this checklist, an air barrier is defined as any durable solid material that blocks air flow between conditioned space and unconditioned space, including necessary sealing to block excessive air flow at edges and seams and adequate support to resist positive and negative pressures without displacement or damage.” Drywall and other kinds of rigid sheathing products must be installed with any “necessary sealing to block excessive air flow at edges and seams” as well as support to resist changes in pressure, which in many cases will be the rigidity of the material itself.
00027	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Section 3 – Fully-aligned air barrier locations
				<p>Issue: Partners have asked if an air barrier is required on the bottom of floor joists between a basement and first story if the floor is within the pressure and thermal boundary and the basement is also unconditioned.</p> <p>Partners have also asked if an air barrier is required behind electrical boxes and at rim joists.</p>
				<p>Resolution: Section 3 states that air barriers are required at each insulated location noted, including “at interior surface of floors in all climate zones, including supports to ensure permanent contact and blocking at exposed edges.” Therefore, if the floor was not insulated, neither an exterior nor an interior air barrier would be required. If the floor was insulated, the underside of the floor joists would be the exterior surface of that assembly, so an air barrier would not be required at that location. Instead, an air barrier would be required at the interior surface.</p> <p>The checklist does not currently include a requirement for either air sealing or providing an air barrier behind electrical boxes. If the electrical box was adjacent to an insulated wall, then the wall would need to meet the same air barrier requirements as all other insulated walls.</p> <p>Rim joists are exempt from the requirement for an interior air barrier, but are required to have an exterior air barrier per Section 3 and Footnote 7.</p>
00113	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Section 3 – Ceiling air barrier location
				Issue: Partners have asked where air barriers are required to be installed when insulating an attic roof deck with fiberglass batts.
				Resolution: Section 3 explains that air barriers are required to be fully aligned with insulation “at interior or exterior surface of ceilings in Climate Zones 1-3; at interior surface of ceilings in

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				<p>Climate Zone 4-8.”</p> <p>If fiberglass batts are installed to maintain contact with the roof deck, then the roof deck is the exterior air barrier. In Climate Zones 1-3, no interior air barrier is required, but in Climate Zones 4-8, an interior air barrier must be installed.</p>
00128	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	<p>Footnote 6 – Use of bagged batts as an air barrier</p> <p>Issue: Partners have requested that a reminder be added to Policy Record ID 00019 to indicate that when bagged batts (fiberglass batts encapsulated in perforated plastic) are used to insulate basement and crawlspace walls, the plastic bags must be sealed at every seam if the plastic is intended to function as an air barrier.</p> <p>Resolution: If plastic bags that encapsulate batt insulation are used as air barriers, they must meet all requirements for an air barrier as defined by Footnote 6: “For purposes of this Checklist, an air barrier is defined as any durable solid material that blocks air flow between conditioned space and unconditioned space, including necessary sealing to block excessive air flow at edges and seams and adequate support to resist positive and negative pressures without displacement or damage. EPA recommends, but does not require, rigid air barriers...If flexible air barriers such as house wrap are used, they shall be fully sealed at all seams and edges and supported using fasteners with caps or heads \geq 1 in. diameter unless otherwise indicated by the manufacturer. Flexible air barriers shall not be made of kraft paper, paper-based products, or other materials that are easily torn. If polyethylene is used, its thickness shall be \geq 6 mil.” This includes the requirement that all seams be sealed to provide a continuous air barrier.</p>
00129	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Change	<p>Footnote 8 – Compressed batts in floors</p> <p>Issue: Footnote 8 allows floors over unconditioned spaces to be insulated with compressed batts for certain configurations, where each acceptable configuration is defined by the nominal R-value of the batt and the depth of the cavity (e.g., R-19 batts in 2x6 cavities). Partners have asked if additional combinations of insulation levels and cavity depths may be used to insulate floors.</p> <p>In addition, several conflicts between these configurations and related requirements of the Checklist have been identified.</p> <ol style="list-style-type: none"> 1. Compressed batts are not installed according to manufacturer installation guidelines and do not perform at their nominal R-value. Therefore, the R-value of the compressed batts must be accurately assessed in order to determine compliance with Item 2.1, which establishes minimum insulation levels. 2. Item 2.2 requires that floor insulation achieve RESNET-defined Grade I installation or, alternatively, Grade II for surfaces with insulated sheathing. Appendix A of the RESNET Mortgage Industry National Home Energy Rating System Standards clarifies that “No more than 10% of surface area of insulation compressed or incomplete fill, by

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				<p>up to 30% (70% or more of intended thickness) is acceptable for 'Grade II'." While compressed batts that are otherwise properly installed do achieve full, permanent contact with the enclosure on all six sides, they are compressed over 100% of their surface area and therefore fail to meet Grade II standards.</p> <p>Accurately assessing the R-value of compressed batts and installing them to meet the intent of Item 2.2 requires that defects unrelated to compressing batts to maintain full contact with their enclosure not be permitted. For example, defects caused by compressing insulation around ducts or piping beyond the level of compression in the rest of the cavity should not be permitted.</p>
				<p>Resolution: Most insulation manufacturers can provide their installers or customers with guidance on the R-value of their product at various rates of compression and on the levels of compression that they do not recommend exceeding. Given the many combinations of batt thicknesses and cavity depths that partners may wish to explore, relying upon this manufacturer guidance will offer more flexibility than providing the prescriptive list of options currently in Footnote 8.</p> <p>To resolve the conflicts related to insulation installation grade, floors will be deemed to meet Item 2.2 so long as the compression caused by excess insulation is the sole defect preventing the insulation from achieving the required installation grade.</p> <p>Footnote 8 will be revised as follows:</p> <p>"Examples of supports necessary for permanent contact include staves for batt insulation or netting for blown-in insulation. Alternatively, batts that completely fill floor cavities enclosed on all six sides may be used to meet Items 2.2 and 3.2, even when compression occurs due to excess insulation, as long as the R-value of the batts has been appropriately assessed based on manufacturer guidance and the only defect preventing the insulation from achieving the required installation grade is the compression caused by the excess insulation."</p>
00114	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Item 3.1.1 – Use of Thermoply as an air barrier
				<p>Issue: Partners have asked if Thermoply can be used as an air barrier behind tubs and showers to meet the intent of Item 3.1.1, which requires fully-aligned air barriers at walls behind showers and tubs.</p>
				<p>Resolution: Rigid air barriers, including Thermoply, may be used to comply with Item 3.1.1, per Footnote 6: "For purposes of this Checklist, an air barrier is defined as any durable solid material that blocks air flow between conditioned space and unconditioned space, including necessary sealing to block excessive air flow at edges and seams and adequate support to resist positive and negative pressures without displacement or damage."</p> <p>Note, however, that Thermoply does not satisfy the intent of Item 4.2 of the Water Management System Builder Checklist, which requires that cement board or equivalent moisture-resistant backing material be installed on all walls behind tub and shower enclosures</p>

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				composed of tile or panel assemblies with caulked joints. Therefore, if Thermoply is used where such enclosures are located adjacent to exterior walls, it must be coupled with a moisture-resistant backing material to meet the intent of both Items.
00028	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Clarification	Item 3.2.3 – Air barrier requirements for insulated floor above unconditioned crawlspace
				Issue: Partners have noted that a fully-aligned air barrier should be required for insulated floors above all unconditioned crawlspace and not just vented crawlspace, as currently stated.
				Resolution: Section 3 requires a fully-aligned air barrier at each insulated location noted in Item 1.1, 1.2, and 1.3. To clarify that an air barrier is required for insulated floors above all unconditioned crawlspace, and not just vented crawlspace, EPA will revise Item 3.2.3 to read as follows: “Floor above unconditioned basement or unconditioned crawlspace”.
00115	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Section 4 – Friction-fitted batts in attic bays
				Issue: Partners have asked whether friction-fitted batts can be installed in attic bays or if a continuous layer of insulation must also be installed to reduce thermal bridging.
				Resolution: There is no requirement to reduce thermal bridging in attics except at attic eaves and under attic platforms. Therefore, friction-fitted batts may be installed in attic bays. It is recommended, but not required, that insulation be used to help reduce thermal bridging through ceiling joists or other framing members at the ceiling interface.
00029	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Item 4.1 – Uncompressed insulation extended to exterior wall
				Issue: Partners have asked whether Item 4.1, which requires uncompressed insulation to extend to the inside face of the exterior wall for insulated ceilings with attic space above, is meant to require that uncompressed insulation extend to the inside face of the exterior wall sheathing or the inside face of the wall assembly.
				Resolution: Due to space constraints at the roof deck-exterior wall interface, uncompressed insulation is only required to extend to the inside face of the exterior wall assembly, not the inside face of the exterior wall sheathing.
00116	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Change	Item 4.1 – Reduced thermal bridging at attic eaves
				Issue: Partners have advised EPA that, while many homes permitted beginning January 1, 2012 will be able to fully comply with Item 4.1, plans for certain homes will need to be redesigned in part or in full to achieve compliance and that this redesign process will require additional time. Further complicating the implementation timeline for this Item is the fact that several key structural parameters of Southern Pine lumber are being reassessed by the American Lumber Standards Committee. Changes to these values would necessitate a redesign of many roof

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				<p>systems.</p> <p>Therefore, an extended implementation timeline for this Item would allow for a single redesign process to both provide adequate clearance for insulation and accommodate the latest structural parameters.</p> <p>Furthermore, partners have noted that requiring “Grade I” insulation in place of “uncompressed” insulation will better align with established terminology and more clearly convey the intent of this Item.</p> <p>Resolution: Based on partner feedback about the feasibility of implementing Item 4.1, full compliance with this requirement will not be required for homes permitted before January 1, 2013.</p> <p>Homes permitted before that date in Climate Zones 1 through 5 shall instead have at least R-15 Grade I insulation in spaces that provide less than 5.5 inches of clearance. For spaces that provide 5.5 inches or more of clearance, at least R-21 Grade I insulation shall be provided.</p> <p>Homes permitted before that date in Climate Zones 6 through 8 shall instead have at least R-21 Grade I insulation in spaces that provide less than 7.0 inches of clearance. For spaces that provide 7.0 inches or more of clearance, at least R-30 Grade I insulation shall be provided.</p> <p>Item 4.1 will be revised to read:</p> <p>“For insulated ceilings with attic space above (i.e., non-cathedralized), Grade I insulation extends to the inside face of the exterior wall below at these levels: CZ 1 to 5: \geq R-21; CZ 6 to 8: \geq R-30.”</p> <p>Footnote 11 will be revised to read:</p> <p>“The minimum designated R-values must be achieved regardless of the trade-offs determined using an equivalent U-factor or UA alternative calculation, with the following exception:</p> <p><u>“For homes permitted through 12/31/2012:</u> CZ 1-5: For spaces that provide less than 5.5 in. of clearance, R-15 Grade I insulation is permitted. CZ 6-8: For spaces that provide less than 7.0 in. of clearance, R-21 Grade I insulation is permitted.</p> <p><u>“For homes permitted on or after 01/01/2013:</u> Homes shall achieve Item 4.1 without exception.</p> <p>Note that if the minimum designated values are used, then higher insulation levels may be needed elsewhere to meet Item 2.1. Also, note that these requirements can be met by using any available strategy, such as a raised-heel truss, alternate framing that provides adequate space, and / or high-density insulation.”</p>
00117	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Clarification	Item 4.1 – Minimum attic insulation levels
				Issue: Partners have asked if the minimum insulation levels specified in Item 4.1 must be met throughout the attic or only at the inside face of the exterior wall below.
				Resolution: Item 4.1 defines minimum insulation levels that must be achieved specifically at

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				<p>the interior face of the exterior wall below. It does not define a minimum insulation level that must be met throughout the attic.</p> <p>Only Item 2.1 defines the insulation levels that are applicable to the overall attic. This Item requires that all ceiling, wall, floor, and slab insulation levels meet or exceed 2009 IECC levels. Footnote 3 explains how to meet this intent and addresses how this approach relates to the requirements for reduced thermal bridging in Items 4.1 through 4.3. Footnote 3d will be revised as follows to more clearly explain the constraints on trade-offs imposed by Items 4.1 through 4.3:</p> <p>“...Also, note that while ceiling and slab insulation can be included in trade-off calculations, Items 4.1 through 4.3 of the Checklist shall be met regardless of the UA tradeoffs calculated...”</p>
00030	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Item 4.2 – Slab edge insulation levels
				<p>Issue: Partners have asked why there appears to be a discrepancy between Item 4.2 and the Thermal Enclosure System Rater Checklist Guidebook that was updated on 03/23/2011. The checklist states that for slabs on grade in Climate Zone 4 and higher, 100% of the slab edge shall be insulated to greater than or equal to R-5, while the guidebook includes a table on page 92 that implies a required insulation level of R-10.</p>
				<p>Resolution: Item 2.1 of the Checklist requires that ceiling, wall, floor, and slab insulation levels meet or exceed the 2009 IECC. One way to demonstrate compliance with this requirement is to use an alternative equivalent total UA calculation. This approach allows insulation to be traded off among assemblies (e.g., insulation can be moved from the walls to the ceiling, from the slab to the wall). This may result in a home where the insulation in one insulated component is less than the prescriptive value while another insulated component has more than the prescriptive value (e.g., the slab may have less than R-10 insulation, while the ceiling has more than R-38). A total building thermal envelope UA that is less than or equal to the total UA resulting from the U-factors in Table 402.1.3 complies with Item 2.1. While ceiling and slab insulation can be included in trade-off calculations, the R-value must meet or exceed the minimum values listed in items 4.1 through 4.3 of the checklist to provide an effective thermal break, regardless of the UA tradeoffs calculated.</p> <p>It is for this reason that there are references to both R-5 and R-10 slab insulation levels. The value of R-10 represents the component insulation requirement for slabs in Climate Zones 4 and higher. This value is to be met or exceeded when trade-off calculations are not used. In contrast, the value of R-5 represents the minimum slab insulation level allowed in these climate zones when UA trade-off calculations are used.</p>
00031	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Change	Item 4.2 – Challenging slab edge insulation details
				<p>Issue: Partners have presented EPA with various specific details that have presented challenges regarding the requirement in Climate Zone 4 and higher to insulate 100% of the slab edge when the slab is on grade. EPA already provides two exemptions related to post-</p>

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				<p>tensioned slabs. Partners have recently asked about the following additional details:</p> <ul style="list-style-type: none"> • For stucco wall systems, can areas be exempted where weep screeds at the bottom of the wall lay flush with the foundation slab? • Can the existing exemption for post-tensioned slabs with integrated garage foundations in multifamily buildings be extended to townhomes? • Can a post-tensioned slab that spans a conditioned space and an adjacent unconditioned hallway in a multi-family structure be exempted? • Can a monolithic slab with a brick ledge be exempted? • Can termite view strips be exempted?
				<p>Resolution: EPA is willing to provide additional exemptions for Item 4.2 for details where a feasible means to insulate the slab edge has not been identified. However, where partners identify such details, they shall provide the detail to EPA to request an exemption prior to the home's qualification. EPA will compile exempted details and work with industry to develop feasible details for use in future revisions to the program. These exemptions will impact the efficiency and comfort of the home; however, EPA is providing them because it has not yet identified a way that insulation can be effectively integrated into the design.</p> <p>With regards to the partner questions above:</p> <ul style="list-style-type: none"> • EPA believes that walls can be designed such that the weep screed rests upon slab insulation rather than directly on the foundation. For example, the sheathing of the exterior wall can be aligned in the same plane as the foundation insulation, providing a continuous insulated surface. Therefore, EPA will require insulation to extend behind the weep screed to satisfy the intent of Item 4.2. • EPA will extend the exemption regarding post-tensioned slabs. Where a continuous post-tensioned slab extends from conditioned to unconditioned space (e.g., from conditioned space to an adjacent unconditioned hallway, to an unconditioned garage, to a porch), insulation is not required to be provided at this boundary to satisfy Item 4.2. This exemption applies to both multifamily and single-family homes. • EPA will not require the horizontal brick ledge of monolithic slabs to be insulated in order to satisfy the intent of Item 4.2. However, the vertical surface on either side of the ledge shall be insulated. Furthermore, floating slabs with brick ledges are not exempted because the insulation layer can be moved to the interior vertical surface of the foundation. • Homes that have uninsulated termite view strips due to code requirements satisfy the intent of Item 4.2. <p>The last sentence of Footnote 5 of the checklist will be revised as follows: "Where specific details cannot meet this requirement, partners shall provide the detail to EPA to request an exemption prior to the home's qualification. EPA will compile exempted details and work with</p>

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				industry to develop feasible details for use in future revisions to the program.”
00032	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Clarification	Item 4.4 – Applicability of reduced thermal bridging requirements to various wall types
				<p>Issue: Partners have asked EPA to clarify whether Item 4.4, which requires reduced thermal bridging at walls, applies to common walls that separate conditioned spaces, to below-grade exterior walls, to attic knee walls, and to mass walls.</p> <p>Resolution: The intent of this item is to improve the resistance of walls to heat transfer by eliminating thermal bridging. Reduced thermal bridging ensures more efficient wall construction and improves occupant comfort. Because heat transfer is driven by the temperature differential between adjacent spaces, Item 4.4 was designed for walls separating conditioned space from unconditioned space and limited to above-grade walls where the temperature differential is the greatest. Therefore:</p> <ul style="list-style-type: none"> • This item applies to all above-grade walls separating conditioned space from unconditioned space, including attic knee walls; • This item does not apply to common walls between attached housing units or to other walls that separate two conditioned spaces; • This item does not apply to below-grade walls, including foundation walls; • This item applies to mass walls, except mass walls that are part of a passive solar design. Compliance options are explained in the revision, below. <p>To reflect these clarifications, this item will be revised as follows:</p> <p>“Reduced thermal bridging at above-grade walls separating conditioned from unconditioned space (rim/band joists exempted) using one of the following options:”</p> <p>A new footnote will be added to this item, as follows:</p> <p>“Mass walls utilized as the thermal mass component of a passive solar design (e.g., a Trombe wall) are exempt from this item. To be eligible for this exemption, the passive solar design must be comprised of the following five components: an aperture or collector, an absorber, thermal mass, a distribution system, and a control system. For more information, see: http://www.energysavers.gov/your_home/designing_remodeling/index.cfm/mytopic=10270.</p> <p>“Mass walls that are not part of a passive solar design (e.g., CMU block or log home enclosure) shall either utilize the strategies outlined in Section 4.4 or the pathway in the assembly with the least thermal resistance shall provide \geq 50% of the applicable component insulation requirement in the 2009 IECC – Table 402.1.1.”</p>
00033	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Change	Footnote 8 – Thermal bridging requirement exemption for architectural features
				<p>Issue: Partners have asked EPA to relocate Footnote 8, which provides an exemption of up to 10% of total exterior wall surface area from the reduced thermal bridging requirements, to Item 4.4 to improve clarity.</p>

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				<p>Additionally, partners have asked whether wall sections with thermal bridging could qualify for this exemption for reasons other than architectural details (e.g., structural steel columns in walls, defective insulation installation).</p> <p>Resolution: EPA will relocate Footnote 8 to Item 4.4. EPA will also revise the Footnote to clarify that this exemption applies to any designed detail (i.e., intentional rather than unintentional design decision). The revised footnote will read as follows: “Up to 10% of the total exterior wall surface area is exempted from the reduced thermal bridging requirements to accommodate intentional designed details (e.g., architectural details such as thermal fins, wing walls, or masonry fireplaces; structural details, such as steel columns). It shall be apparent to the Rater that the exempted areas are intentional designed details or the exempted area shall be documented in a plan provided by the builder, architect, designer, or engineer. The Rater need not evaluate the necessity of the designed detail to qualify the home.”</p>
00034	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	<p>Item 4.4 – Reduced thermal bridging using double-wall framing</p> <p>Issue: Partners have asked EPA to determine whether a wall constructed with 2x6 top and sill plates, staggered 2x4 studs with 12” on-center spacing, and dense packed cavity insulation would meet the intent of Item 4.4.</p> <p>Resolution: Footnote 15 provides the definition of double-wall framing, which would encompass the technique described above: “Double-wall framing is defined as any framing method that ensures a continuous layer of insulation covering the studs to at least the R-value required in Item 4.4.1 of the checklist, such as offset double-stud walls, aligned double-stud walls with continuous insulation between the adjacent stud faces, or single-stud walls with 2x2 or 2x3 cross-framing. In all cases, insulation shall fill the entire wall cavity from the interior to exterior sheathing except at windows, doors and other penetrations.” Therefore, this technique would meet the intent of Item 4.4, as long as a continuous layer of insulation covered the studs to at least the minimum insulation value listed in Item 4.4.1.</p>
				<p>Item 4.4 – Use of 2x4 walls in CZ 5-8</p> <p>Issue: Partners have asked about the reduced thermal bridging requirement for walls outlined in Item 4.4. Specifically, partners have asked for confirmation that 2x4 framing with 16” on-center spacing in Climate Zones 5-8 is an acceptable practice.</p> <p>Resolution: To meet the reduced thermal bridging requirements for walls, the builder may use any one of the strategies listed in Items 4.4.1 through 4.4.5, or a combination of these strategies. If Item 4.4.5 is chosen, the builder must comply with all requirements listed in Items 4.4.5a – 4.4.5e. The use of 2x4 framing with 16” on-center spacing complies with Item 4.4.5e in every climate zone. However, if this option is chosen, the builder must also meet all requirements</p>

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				outlined in Items 4.4.5a – 4.4.5d in order to completely fulfill the requirements of Item 4.4. Also, note that Item 2.1 of the checklist requires that ceiling, wall, floor, and slab insulation levels meet or exceed the 2009 IECC. Therefore, additional insulation will likely need to be added to the non-wall assemblies in order to meet this item.
00036	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Refinement	Footnote 13 – Insulated siding and sheathing errata
				Issue: Partners have noted that the footnote describing the use of insulated siding and insulated sheathing as water resistive barriers has inadvertently interchanged the two terms relative to prior revisions.
				Resolution: To improve clarity, the footnote will be revised as follows: “If used, insulated siding shall be attached directly over a water-resistive barrier and sheathing. In addition, it shall provide the required R-value as demonstrated through either testing in accordance with ASTM C 1363 or by attaining the required R-value at its minimum thickness. Insulated sheathing rated for water protection can be used as a water resistant barrier if all seams are taped and sealed. If non-insulated structural sheathing is used at corners, advanced framing details listed under Item 4.3.5 shall be met for those wall sections.”
00095	10/13/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Clarification	Footnote 13 – Reduced thermal bridging in mass walls
				Issue: Partners have raised a question regarding the reduced thermal bridging requirements for mass walls that are not part of a passive solar design. Specifically, partners have asked if the thermal resistance of each material in the mass wall assembly is permitted to contribute to the component insulation level referenced in Footnote 13 of the Checklist (“... shall provide \geq 50% of the applicable component insulation requirement in the 2009 IECC..”) or if only some subset of insulating materials may be used to meet this requirement.
				<p>Response: The thermal resistance of each material in the mass wall assembly is permitted to contribute towards meeting the intent of this requirement. In order to clarify this intent, the second paragraph of Footnote 13 of the Checklist will be revised to reference the mass wall equivalent U-factors defined in Table 402.1.3 of the 2009 IECC rather than the component insulation requirements defined in Table 402.1.1 of the 2009 IECC.</p> <p>The second paragraph of the footnote will be revised to read as follows:</p> <p>“Mass walls that are not part of a passive solar design (e.g., CMU block or log home enclosure) shall either utilize the strategies outlined in Section 4.4 or the pathway in the assembly with the least thermal resistance, as determined using a method consistent with the 2009 ASHRAE Handbook of Fundamentals, shall provide \geq 50% of the applicable assembly resistance, defined as the reciprocal of the mass wall equivalent U-factor in the 2009 IECC – Table 402.1.3.”</p> <p>For example, in CZ 2, the inverse of the mass wall equivalent U-factor in the 2009 IECC – Table 402.1.3 is $1 / 0.165 = 6.06$. As long as the path through the assembly with the least resistance provides at least 50% of this value (i.e., R-3.0), then the mass wall would meet the</p>

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				intent of the thermal bridging requirements in Item 4.4 of this Checklist. The resistance of the path would be determined using a method consistent with the 2009 ASHRAE Handbook of Fundamentals, such that air layers and all other assembly layers are included.
00130	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Clarification	Footnote 13 – Reduced thermal bridging for mass walls not part of passive solar designs
				<p>Issue: Partners have asked two questions regarding the reduced thermal bridging requirements for mass walls that are not part of a passive solar design.</p> <p>First, partners have asked whether the thermal resistance of each material in the mass wall assembly is permitted to contribute to the component insulation level referenced in Footnote 13 of the Checklist (“... shall provide $\geq 50\%$ of the applicable component insulation requirement in the 2009 IECC...”) or if only some subset of insulating materials may be used to meet this requirement.</p> <p>Second, partners have asked if the component insulation level must be met strictly through the nominal resistance of the components or if thermal mass effects can also contribute towards meeting this requirement.</p>
				<p>Resolution: The nominal thermal resistance of each material in the mass wall assembly is permitted to contribute towards meeting the intent of this requirement. Thermal mass effects are not permitted to contribute towards meeting this requirement.</p> <p>In order to clarify this intent, the second paragraph of Footnote 13 will be revised to reference the mass wall equivalent U-factors defined in Table 402.1.3 of the 2009 IECC rather than the component insulation requirements defined in Table 402.1.1 of the 2009 IECC. The revised Footnote will also refer to the ASHRAE Handbook of Fundamentals as the basis for calculating the thermal resistance of the assembly.</p> <p>The second paragraph of the Footnote will be revised to read:</p> <p>“Mass walls that are not part of a passive solar design (e.g., CMU block or log home enclosure) shall either utilize the strategies outlined in Item 4.4 or the pathway in the assembly with the least thermal resistance, as determined using a method consistent with the 2009 ASHRAE Handbook of Fundamentals, shall provide $\geq 50\%$ of the applicable assembly resistance, defined as the reciprocal of the mass wall equivalent U-factor in the 2009 IECC – Table 402.1.3. Documentation identifying the pathway with the least thermal resistance and its resistance value shall be collected by the Rater and any Builder Verified or Rater Verified box under Item 4.4 shall be checked.”</p> <p>For example, in CZ 2, the reciprocal of the mass wall equivalent U-factor in the 2009 IECC – Table 402.1.3 is $1 / 0.165 = 6.06$. As long as the path through the assembly with the least resistance provides at least 50% of this value (i.e., R-3.0), then the mass wall would meet the intent of the thermal bridging requirements in Item 4.4 of this Checklist. The resistance of the path would be determined using a method consistent with the 2009 ASHRAE Handbook of</p>

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				Fundamentals, such that air layers and all other assembly layers are included.
00131	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Refinement	Footnote 15 – Corrected reference to a Checklist Item
				Issue: Partners have noted that the reference in this Footnote does not align with the terminology used in the Checklist.
				Resolution: To improve clarity, the phrase “Section 4.4.1” will be revised to read “Item 4.4.1”.
00037	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Item 4.4.5a – Framing fractions related to advanced framing practices
				Issue: Partners have asked where to find standard framing fractions for various stud spacing distances, specifically those in Item 4.4.5e.
				Resolution: EPA does not provide default framing fraction values. Raters wishing to use default values should refer to the guidance provided in the RESNET 2006 Mortgage Industry National Home Energy Rating Standard, available at the following link: http://www.resnet.us/standards . Additionally, partners may wish to calculate the fraction for a specific home using its framing plan.
00118	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Clarification	Item 4.4.5b – Uninsulated full-depth headers
				Issue: Item 4.4.5b and Footnote 18 require that all headers above doors and windows be insulated, except where a framing plan provided by the builder, architect, designer, or engineer indicates that full-depth solid headers are the only acceptable option. Partners have asked if uninsulated full-depth headers can be used to meet the intent of Item 4.4.5b even if other header options are viable. Because full-depth headers can bear larger loads, the height of these products may be less than that of headers that are not full-depth, particularly for engineered wood products. As a result, the wall area available for full-depth insulation may be increased, even though the header itself is not insulated.
				Resolution: Uninsulated full-depth headers are permitted to be used to meet the intent of Item 4.4.5b, even if other header options are viable. Footnote 18, which clarifies Item 4.4.5b, will be revised to read as follows: "Header insulation shall be \geq R-3 for wall assemblies with 2x4 framing, or equivalent cavity width, and \geq R-5 for all other assemblies (e.g., with 2x6 framing). Compliance options include continuous rigid insulation sheathing, SIP headers, other prefabricated insulated headers, single-member or two-member headers with insulation either in between or on one side, or an equivalent assembly, except where a framing plan provided by the builder, architect, designer, or engineer indicates that full-depth solid headers are to be used. The Rater need not evaluate the structural necessity of the details in the framing plan to qualify the home. Also, the framing plan need only encompass the details in question and not necessarily the entire home. R-value requirement refers to manufacturer's nominal insulation value."

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00038	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Change	Footnote 17 – Insulated header R-value requirements
				<p>Issue: EPA has identified an unintended barrier to meeting the insulated header requirements in this checklist. Item 4.4.5b requires that partners insulate headers above windows and doors to at least R-5 in Climate Zones 5 through 8. While many partners in these climate zones are using 2x6 wall assemblies or 2x4 wall assemblies with insulated sheathing, several partners expressed difficulty meeting this requirement because of their use of 2x4 wall assemblies without insulated sheathing. For such wall assemblies, space constraints make it difficult to achieve the required insulation level.</p> <p>EPA defined the requirement for R-5 header insulation in Climate Zones 5 through 8 assuming that builders in these regions would be using 2x6 framing, 2x4 framing with insulated sheathing, or other advanced assemblies in order to meet the 2009 IECC insulation levels required in Item 2.1. While this is true for many partners, some are using 2x4 wall assemblies without insulated sheathing. By using high-density insulation products and increased insulation in other assemblies, they are still able to meet the 2009 IECC insulation requirements using a UA approach. For these 2x4 assemblies, there is typically not enough space to incorporate R-5 insulation at the header.</p>
				<p>Resolution: The beginning of Footnote 17 will be revised to define minimum insulation levels based upon assembly thickness, rather than climate zone, as follows: “Header insulation shall be \geq R-3 for wall assemblies with 2x4 framing, or equivalent cavity width, and \geq R-5 for all other assemblies (e.g., with 2x6 framing). Compliance options include continuous rigid insulation sheathing...”</p>
00119	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Item 4.4.5d – Compressed insulation behind ladder framing
				<p>Issue: Partners have asked if the intent of Item 4.4.5d (“All interior / exterior wall intersections insulated to the same R-value as the rest of the exterior wall”) is satisfied even when ladder framing compresses the insulation at the interior/exterior wall intersection. For example, if “2x” framing is used to create the ladder and the “2x” dimension is oriented horizontally, then the insulation will be compressed by 1.5 in. and its effective R-value reduced below that of the rest of the exterior wall insulation.</p>
				<p>Resolution: Installing insulation with the same nominal R-value as the insulation in the rest of the exterior wall meets the requirements of Item 4.4.5d, even if it is compressed behind ladder framing. Note, however, that the overall exterior wall must still meet the insulation installation requirement of Item 2.2.</p> <p>The intent of this requirement is to ensure that insulation is installed in the cavity created by the intersection of an interior wall and an exterior wall. Typically, this intersection is filled entirely with vertical studs or is left completely uninsulated, which creates a significant thermal bridge. Insulation installed with the same nominal R-value as the rest of the exterior wall will generally represent an improvement over typical building practice, even if some compression occurs.</p>

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00039	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Item 4.4.5e – Rater verification of stud spacing for advanced framing
				Issue: Partners have asked about the proper course of action when a Rater finds a framing element that does not have a clear structural purpose. Partners have also asked what course of action should be taken when the architect insists on a framing plan that does not meet the advanced framing requirements in Item 4.4.5.
				<p>Resolution: In both cases, as per Footnote 20 of the checklist, the Rater should collect a framing plan from the builder, architect, designer, or engineer that encompasses the detail in question.</p> <p>With regards to framing plans that do not meet Item 4.4.5, EPA cannot place Raters in a position where they are asked to overrule the judgment of builders, architects, designers, or engineers on structural matters. For this reason, EPA does not require the Rater to evaluate the structural necessity of the details in the framing plan to qualify the home. Instead the Rater is advised to educate and collaborate with the builder to develop alternative strategies that do meet the intent where possible.</p> <p>Ultimately, the Rater has the ability to withhold the label and may choose to do so in cases where the Rater believes that there is a systematic attempt to circumvent the intent of this item. The Rater can also consult with their Provider and with EPA in such cases. EPA has included advanced framing details as one effective and low-cost means to reduce thermal bridging. However, if this option is not implemented properly on a consistent basis, EPA will need to consider whether to remove this option in future versions of the program guidelines.</p>
00120	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Section 5 – Thickness requirements for foam used for air sealing
				Issue: Partners have asked if foam used for air sealing any of the penetrations, cracks, and openings listed in Section 5 must meet the minimum thickness requirements established by Footnote 6 for open- and closed-cell foam to be used as air barriers.
				Resolution: Footnote 6 applies to Section 3, Fully-Aligned Air Barriers, not to Section 5, Air Sealing. Foam does not need to meet the minimum thickness requirements of Footnote 6 when used to seal Items in Section 5.
00040	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Item 5.2.1 – Foam gasket beneath sill plates on concrete or masonry
				Issue: Partners have asked EPA to evaluate whether a sill sealer meets the intent of Item 5.2.1, which requires that sill plates adjacent to conditioned space be sealed to the foundation or sub-floor with caulk and that a gasket also be placed beneath the sill plate if it rests atop concrete or masonry. Separately, partners have also asked EPA for permission to use adhesive in place of a foam gasket to meet the intent of this item.
				Resolution: A sill sealer would meet the intent of using a foam gasket underneath sill plates resting atop concrete or masonry. Note that Item 5.2.1 also requires the sill plate to be sealed to the foundation or subfloor with caulk.

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				Adhesive is a bonding agent and does not provide the same air sealing properties as a foam gasket. When adhesive dries, it is prone to cracking, which can lead to many small penetrations through which air can enter the home. For this reason, applying adhesive to seal a sill plate to the foundation or sub-floor does not meet the intent of Item 5.2.1.
00121	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Item 5.2.1 – Foam gaskets under sill plates atop non-solid foundations
				Issue: Partners have asked if a foam gasket is required beneath sill plates adjacent to conditioned space if they rest on a foundation that is not solid (e.g. CMU foundation walls).
				Resolution: Item 5.2.1 requires a foam gasket beneath sill plates resting atop concrete or masonry (e.g., CMU walls) and adjacent to conditioned space: “All sill plates adjacent to conditioned space sealed to foundation or sub-floor with caulk. Foam gasket also placed beneath sill plate if resting atop concrete or masonry and adjacent to conditioned space.”
00122	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Item 5.2.1 – Foam gaskets and sill plate caulking
				Issue: Partners have asked why sill plates adjacent to conditioned spaces must be sealed to the foundation or sub-floor with caulk AND a foam gasket must also be placed beneath them if they rest atop concrete or masonry.
				Resolution: A foam gasket and caulk sealing are required where sill plates rest atop concrete or masonry to provide adequate air sealing. Homes are particularly susceptible to poor air-sealing at the interface of two dissimilar materials such as these. This occurs because inconsistencies in the shape and texture of the materials often lead to substantial gaps through which air can leak. Therefore, a foam gasket and caulk sealing are both required as a best practice to eliminate gaps and ensure a complete air seal.
00123	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Item 5.2.1 – Alternatives to foam gaskets
				Issue: Partners have asked if caulk or construction adhesive may be applied to the bottom of the sill plate in place of a foam gasket to meet the intent of Item 5.2.1.
				Resolution: Neither adhesive nor caulk applied by themselves to the bottom of the sill plate provide the uniform and complete sealing provided by a gasket; they are not acceptable alternatives to a foam gasket and do not meet the intent of Item 5.2.1.
00124	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Clarification	Item 5.2.1 – Alternatives to sill plate caulking
				Issue: Partners have asked if foam sealants may be used in place of caulk to seal sill plates adjacent to conditioned spaces to the foundation or sub-floor per Item 5.2.1.
				Resolution: Foam sealant is permitted to be used in place of caulk to seal the sill plate to the foundation or sub-floor. Item 5.2.1 will be revised as follows: “All sill plates adjacent to conditioned space sealed to foundation or sub-floor with caulk, foam, or equivalent material.”

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				Note that when sealing the foundation to the sill plate, products should be selected in part based on the voids that they are intended to fill. Larger voids should be filled with expandable materials and smaller voids with more precise materials. Manufacturer instructions typically provide guidance on proper product selection and use.
00041	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Item 5.2.3 – Purpose and methods for sealing top plates
				Issue: Partners have asked about the intent of Item 5.2.3, which requires “sheetrock sealed to top plate at all attic/wall interfaces using caulk, foam, or equivalent material”. Partners have also asked about appropriate methods for meeting this requirement, including suggestions for gasketing materials that can be used between the top plate and drywall.
				Resolution: The interface between the drywall and the top plate is a common point of air leakage in the home’s pressure boundary. Furthermore, extreme temperatures are often found in unconditioned attics, exacerbating the efficiency and comfort impacts for the home’s occupants when leakage occurs. Per Item 5.2.3, there are two ways to seal drywall to top plates: “either apply the sealant directly between the sheetrock and top plate or to the seam between the two from the attic above.” EPA is not permitted to endorse any specific products, but any caulk, foam, or equivalent material that can fully seal the top plate is an acceptable material. Note that construction adhesive is not permitted to be used.
00125	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Clarification	Item 5.2.3 – Air sealing at conditioned attic / wall interfaces
				Issue: Partners have asked if air sealing ceiling drywall to the top plate per Item 5.2.3 is still required when the thermal and pressure boundary of the home is located at the roof deck of the attic rather than at the attic / ceiling interface. Additionally, partners have requested that construction adhesive be permitted to be used to seal drywall to top plates at attic / wall interfaces. This adhesive is typically already stocked on construction sites when drywall is being installed, so meeting Item 5.2.3 through the use of adhesive is more achievable than through the use of caulk, foam, or gaskets.
				Resolution: The specific intent of Item 5.2.3 is explained in Policy Record Item 00041: <p>“The interface between the drywall and the top plate is a common point of air leakage in the home’s pressure boundary. Furthermore, extreme temperatures are often found in unconditioned attics, exacerbating the efficiency and comfort impacts for the home’s occupants when leakage occurs.”</p> <p>When the thermal and pressure boundary of the home are located at the roof deck of the attic, both of the concerns listed above are no longer applicable and Item 5.2.3 is not required. That is to say:</p> <ul style="list-style-type: none"> • The pressure boundary of the home moves to the roof deck, so air leaking through the drywall / top plate interface is no longer passing through the home’s pressure

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				<p>boundary.</p> <ul style="list-style-type: none"> Installing insulation at the roof deck brings the attic within the home's thermal boundary and therefore eliminates the extreme temperatures that can be found in unconditioned attics. <p>Item 5.2.3 will be revised to not require sealing when the thermal and pressure boundary of the home is at the roof deck.</p> <p>Item 5.2.3 allows "caulk, foam, or equivalent material" to be used to seal drywall to the top plate. Construction adhesive was excluded because it is not primarily intended to serve as an air sealing material and because the term encompasses many kinds of adhesives with very different properties, some of which are not conducive to this application.</p> <p>Based on feedback from partners, along with further research and consultation with DOE's Building America Program, drywall adhesive will now be permitted to be used to meet Item 5.2.3. Drywall adhesive is designed specifically to maintain a bond with drywall and therefore is an equivalent material for Item 5.2.3. Note that this allowance applies to drywall adhesive, not to all construction adhesives.</p> <p>This item will be revised as follows:</p> <p>"Drywall sealed to top plate at all unconditioned attic / wall interfaces using caulk, foam, drywall adhesive (but not other construction adhesives), or equivalent material. Either apply sealant directly between drywall and top plate or to the seam between the two from the attic above."</p>
00096	10/31/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Clarification	<p>Item 5.3.1 and 5.3.2 – Attic access insulation</p>
				<p>Issue: Partners have asked several questions about insulating and air sealing attic accesses, including which surfaces must be insulated for various types of access on ceilings and walls, whether non-uniform insulation levels can be used to meet the intent of the checklist items, and whether insulation may be attached to access panels or if only prefabricated covers are acceptable.</p>
				<p>Response: Attic access panels on vertical surfaces (i.e., walls) are required to meet the requirements for doors contained in Item 5.3.1. In contrast, Item 5.3.2 applies to attic access panels and drop-down stairs located in ceilings, where ceilings are defined as all non-vertical surfaces, regardless of slope (e.g., cathedral ceilings, tray ceilings, conditioned attic roof decks, flat ceilings, sloped ceilings).</p> <p>Item 5.3.2 requires that accesses be insulated to at least R-10, while attic accesses on vertical surfaces are not required to be insulated to any particular level by Item 5.3.1. Footnote 24 recognizes several examples of acceptable insulation approaches that meet the intent of Item 5.3.2, including adhering insulation to an access panel: "Examples of durable covers include, but are not limited to, pre-fabricated covers with integral insulation, rigid foam adhered to cover with adhesive, or batt insulation mechanically fastened to the cover (e.g., using bolts, metal wire, or metal strapping)."</p>

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				<p>The insulation requirement in Item 5.3.2 applies to the surface area bounded by the gasketing material. Examples of surfaces required to be insulated for different kinds of attic accesses are available at http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_v2_v3_training_resources.</p> <p>Partners can meet the requirement in Item 5.3.2 for a cover insulated to at least R-10 in one of two ways.</p> <p><u>Compliance Option 1: Continuous \geq R-10 Insulation</u></p> <p>One option to demonstrate compliance is to insulate 100% of the applicable surface area with \geq R-10 insulation.</p> <p><u>Compliance Option 2: Alternative Equivalent U-Factor</u></p> <p>A second option to demonstrate compliance is to achieve an alternative equivalent U-factor that is less than or equal to 0.10, which shall be calculated using the following parameters:</p> <ol style="list-style-type: none"> 1. The parallel path methodology outlined in Chapter 25 - <i>Heat, Air, and Moisture Control in Building Assemblies -Fundamentals</i> 2009 ASHRAE Handbook of Fundamentals shall be used; 2. Material U-factors shall be taken from Chapter 26 - <i>Heat, Air, and Moisture Control in Building Assemblies -Material Properties</i> of the 2009 ASHRAE Handbook of Fundamentals; 3. The calculation shall be performed moving from the interior surface to the exterior surface (heat transfer under winter conditions) to ensure consistent results; 4. A minimum of 75% of the applicable surface area shall be insulated to at least R-10. <p>Footnote 24 will be revised as follows:</p> <p>“Examples of durable covers include, but are not limited to, pre-fabricated covers with integral insulation, rigid foam adhered to cover with adhesive, or batt insulation mechanically fastened to the cover (e.g., using bolts, metal wire, or metal strapping). In all cases, the surface area bounded by the gasketing material shall either be insulated to \geqR-10 or achieve an alternative equivalent U-factor \leq 0.10 using the methodology defined in EPA’s guidance on attic entrances available at http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_v2_v3_training_resources.”</p>
00042	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	<p>Item 5.3.2 – Use of weather stripping to seal attic access panels</p> <p>Issue: Partners have asked whether weather stripping is sufficiently durable to be used as a gasketing material around attic access panels.</p> <p>Resolution: Weather stripping may be used as a gasketing material to meet the intent of Item 5.3.2.</p>

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00043	07/25/2011	Thermal Enclosure System Rater Checklist (Version 3, Rev. 03)	Comment	Item 5.3.2 – Attic access panel insulation levels
				Issue: Partners have asked why there is a discrepancy between the 2009 IECC's required insulation levels for attic hatches and the requirements in Item 5.3.2. The partner noted that the 2009 IECC requires that attic hatches be insulated to the same levels as the surrounding area whereas the Thermal Enclosure System Rater Checklist requires a minimum of R-10.
				<p>Resolution: The intent of Item 2.1 is to ensure that the overall thermal envelope of the home meets or exceeds the insulation level requirements of the 2009 IECC, as demonstrated by using the prescriptive R-values, an alternative equivalent U-factor calculation, or an alternative equivalent total UA calculation. However, Item 5.3.2 of the checklist imposes a minimum insulation level of R-10 for attic access panels, which must always be met, even when using the equivalent U-factor or total UA options.</p> <p>That is to say, the IECC allows builders to go down to R-0 (i.e., no insulation) in all locations as long as the builder compensates elsewhere with higher levels of insulation and achieves an equivalent U-factor or total UA value. EPA has learned, however, that there are several common locations with a high potential for significant thermal bypasses. Therefore, EPA is imposing more stringent requirements than code by never allowing the insulation level to drop below the level specified in Item 5.3.2, regardless of the tradeoffs used.</p>
00126	01/15/2012	Thermal Enclosure System Rater Checklist (Version 3, Rev. 04)	Comment	Rater Pre-Drywall Inspection Date field and Rater Final Inspection Date field
				Issue: Partners have asked if the Rater Pre-Drywall Inspection Date and Rater Final Inspection Date fields are required to be completed for every home.
				Resolution: The Rater Pre-Drywall Inspection Date and Final Inspection Date must be provided for all homes to document who completed the Checklist and when they completed it. If the builder verifies any items on the Checklist, then the Builder Inspection Date and Builder Employee fields also must be provided.
00044	07/25/2011	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 03)	Comment	HVAC contractor training and credentialing
				Issue: Partners have asked if HVAC contractors who only install ventilation systems or local mechanical exhaust must still be credentialed. Similarly, for homes with hydronic heating (e.g., a boiler) and no air conditioning, partners have asked if a credentialed HVAC contractor must still be used to design and install the ventilation and exhaust system.
				Resolution: At this time, in order to verify any items on the HVAC System Quality Installation Contractor Checklist, the contractor must complete the necessary training and credentialing. Even if the contractor only installs a whole house ventilation system, they must hold the proper credentials. However, EPA is considering whether to allow alternate credentials to be used for homes in certain circumstances, such as homes with hydronic heating and no air conditioners (where the mechanical ventilation system is the only applicable portion of the contractor checklist) or for parties that only complete the HVAC design and not the installation or

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				commissioning of equipment.
00132	01/15/2012	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 04)	Comment	Required credentials for HVAC contractors serving multiple markets
				Issue: Partners have asked if HVAC contractors working in multiple markets must attend a training session for each market that they serve.
				<p>Resolution: HVAC contractors that complete the HVAC System QI Contractor Checklist must be credentialed by an EPA-recognized industry oversight organization. The credential is awarded to companies, not to individuals, and applies to all markets served by credentialed companies.</p> <p>As part of the credentialing process, contractors will typically need to attend a short training explaining the application process, but this is just one step in the larger credentialing process. For more information regarding the HVAC credentialing requirements visit www.energystar.gov/newhomesHVAC.</p>
00133	01/15/2012	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 04)	Change	Required credentials for HVAC designers and Raters and applicability of Checklist to whole-house mechanical ventilation system design and installation
				<p>Issue: Partners have asked several questions related to HVAC credentialing:</p> <ol style="list-style-type: none"> 1. For some homes, the HVAC design and HVAC installation are completed by two independent companies. Partners have asked if both entities must be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO). This question is of particular relevance to heating, cooling, and ventilation designers that do not install equipment because many elements of the currently available credential (e.g., fleet management, hazardous materials regulations, safety programs) are not relevant to such companies. 2. Footnote 1 allows Raters to verify items on the Checklist. Partners have asked if there are any restrictions on the number of items that Raters are permitted to verify and if there are any items that Raters are not permitted to verify because they require specialized training and knowledge (e.g., refrigerant testing). <p>Some homes are built with hydronic heating systems and no air conditioning, so that the only forced-air system other than local mechanical exhaust is whole-house mechanical ventilation. Partners have asked which parts of the HVAC System Quality Installation Contractor Checklist must be completed in this case and, for the parts that must be completed, which must be completed by a credentialed HVAC contractor.</p>
				Resolution: The intent of the HVAC credentialing requirement is to ensure that firms have adequate standards and processes in place to properly perform their work, to provide oversight through quality assurance activities, to provide a complaint resolution process, and to recognize firms that voluntarily hold themselves to these standards. The intent was not to prescribe a particular business model (i.e., a contractor who both designs and installs heating,

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				<p>cooling, and ventilation systems).</p> <p>Therefore, until credentials are available specifically for heating, cooling, and ventilation system designers, either the builder (or a firm or HERS Rater hired by the builder) or the credentialed HVAC contractor (or a firm or HERS Rater hired by the credentialed contractor) shall be permitted to design such systems and to complete Sections 1 through 5 of the HVAC System Quality Installation Contractor Checklist. As always, the designer must comply with applicable codes and laws that regulate HVAC designers and HVAC designs.</p> <p>When a credentialed contractor retains an uncredentialed company or HERS Rater to design systems and complete any items in Section 1 through 5, the credentialed contractor shall be responsible for ensuring that the work complies with the Checklist and that the Checklist has been completed, including preparing the documentation required by Items 1.3, 2.18, and 3.15. In essence, the responsibilities of the contractor have not changed. Rather, this resolution clarifies that credentialed contractors are permitted to retain a design company, even if that company is not itself credentialed.</p> <p>When a builder retains an uncredentialed company or utilizes in-house staff or a HERS Rater, the builder shall be responsible for ensuring that the work complies with the Checklist and that the Checklist has been completed, including preparing the documentation required by Items 1.3, 2.18, and 3.15.</p> <p>In both cases, Sections 6 through 12 of the Checklist may only be completed by a credentialed HVAC contractor.</p> <p>If there are no forced-air heating or cooling systems in the home, then Section 1 is the only section of the Checklist that must be completed. This is true even in such homes that use a forced-air ventilation system, because ASHRAE 62.2-2010 does not prescribe room-level duct design requirements for the ventilation system.</p> <p>The second through fourth paragraphs of Footnote 1 will be combined and revised to add the guidance on ventilation systems and to remove the guidance related to Raters (which will be relocated to Footnotes 5 and 6):</p> <p>“This Checklist applies to ventilation systems, split air conditioners, unitary air conditioners, air-source / water-source (i.e., geothermal) heat pumps up to 65,000 Btu / h and furnaces up to 225,000 Btu / h. All other equipment, including boilers, is exempt. If the ventilation system is the only applicable system installed in the home, then only Section 1 shall be completed.”</p> <p>“One Checklist shall be completed for each system and provided to the Rater. This Checklist with supporting documents may also be used to demonstrate compliance with Indoor airPLUS specifications 4.1, 4.2, 4.5, 4.6, and 7.1.”</p> <p>Footnote 4 will be revised to align with this policy change allowing builders, credentialed contractors, and firms that they hire to perform HVAC design:</p> <p>“The person responsible for the heating, cooling, and ventilation design shall be responsible for</p>
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				<p>completing Sections 1 and 2 of this Checklist.”</p> <p>Footnote 6 will be revised to clarify the credentialed HVAC contractor’s responsibility:</p> <p>“The ‘Cont. Verified’ column shall be used to indicate items verified by the credentialed HVAC contractor (or a firm or HERS Rater hired by the contractor). The credentialed contractor is responsible for these Items and shall sign the bottom of this Checklist.”</p> <p>The second verification column on the Checklist will be revised from “Rater Verified” to “Builder Verified” so that the “Builder Verified” and “Cont. Verified” columns reflect the parties responsible for the completion of the Checklist. A new footnote will be added to the “Builder Verified” column to clarify the builder’s responsibility:</p> <p>“The ‘Builder Verified’ column shall be used to indicate items verified by the builder (or a firm or HERS Rater hired by the builder). The builder is responsible for these Items and must sign the bottom of this Checklist if any items in Sections 1 through 5 on this Checklist have been marked ‘Builder Verified’. Only credentialed contractors may complete Items in Sections 6-10.”</p> <p>The signatures at the bottom of the Checklist will be revised to collect the name, signature, and date of signature of representatives of the credentialed HVAC contractor and the builder. Footnote 25 will be applied to the builder name, signature, and date of signature, and will explain that the builder’s signature is only required if items on the Checklist have been marked “Builder Verified.”:</p> <p>“Builder name, signature, and signature date are required if any items in Sections 1 through 5 have been marked ‘Builder Verified’.”</p>
00134	01/15/2012	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 04)	Comment	Section 1 – ASHRAE 62.2-2010
				Issue: Partners have asked where they can obtain a copy of ASHRAE 62.2.-2010: Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings.
				Resolution: ASHRAE 62.2-2010 can be previewed and purchased at http://openpub.realread.com/rrserver/browser?title=/ASHRAE_1/ashrae_62_2_2010_1024 .
00045	07/25/2011	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 03)	Clarification	Item 1.1 and 1.5 – Ventilation system requirements
				Issue: Partners have asked whether Item 1.5 is a requirement that can be met in place of Item 1.1, which requires that a ventilation system be designed to meet ASHRAE 62.2-2010 requirements, or if Item 1.1 must always be met.
				Resolution: A whole-building mechanical ventilation system that meets the requirements of ASHRAE 62.2-2010 shall be installed in each qualified home. To improve clarity, Item 1.1 will be revised as follows: “Ventilation system installed that has been designed to meet ASHRAE 62.2-2010 requirements including, but not limited to, requirements in Items 1.2-1.5.”
00046	07/25/2011	HVAC System Quality Installation	Change	Footnote 7 and 18 – HVAC design for multiple orientations
				Issue: Partners have requested that EPA combine Footnotes 7 and 18, which relate to HVAC

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		Contractor Checklist (Version 3, Rev. 03)		<p>design, into a single footnote for clarity. Partners have also requested that EPA clarify the other design requirements for homes with multiple configurations or orientations and that some tolerance be provided when designing the duct system in order to minimize the number of different duct designs that need to be managed for a single plan.</p> <p>Resolution: Footnotes 7 and 18 will be combined into a single footnote, which will read as follows: “Heating and cooling loads shall be calculated, equipment shall be selected, and duct systems shall be sized according to the latest editions of ACCA Manuals J, S, & D, respectively, ASHRAE 2009 Handbook of Fundamentals, or a substantively equivalent procedure. The HVAC system design shall be completed for the planned orientation and configuration of the home except as permitted herein.”</p> <p>“For house plans with multiple configurations or that may be built in more than one orientation, the loads shall be calculated for each potential orientation or alternate configuration. If the loads across all orientations vary by $\leq 25\%$, then the largest load shall be permitted to be used for equipment selection for all orientations, subject to the over-sizing limits of ACCA Manual S. Otherwise, the contractor shall group the load for each orientation into a set with $\leq 25\%$ variation and equipment selection shall be completed for each set of loads.”</p> <p>“For house plans with multiple configurations or that may be built in more than one orientation, the room-level design airflows shall be calculated for each potential orientation or alternate configuration. If the design airflows for each room vary across all orientations and configurations by $\leq 25\%$ or 25 CFM, then the average room-level design airflow shall be permitted to be used when designing the duct system. Otherwise, the contractor shall group the room-level design airflow for each orientation and configuration into a set with $\leq 25\%$ or 25 CFM variation and the duct design shall be completed for the average airflow of that set.”</p>
00138	01/15/2012	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 04)	Comment	<p>Footnote 7 – Worst-case configurations in HVAC design</p> <p>Issue: Partners have asked whether they can calculate loads and select equipment for a set of home plan configurations based on the worst-case configuration or if they must calculate loads and select equipment for each individual configuration instead. For example, if a plan can be built with either an unconditioned porch or an optional conditioned sun room, can loads be calculated and equipment be selected using the worst-case configuration, which will likely include the sunroom, even if the plan will sometimes be built without the sunroom?</p> <p>Resolution: Footnote 7 defines how loads are to be calculated for home plans built in different configurations based on the date of final inspection for the home:</p> <p><i>“For homes with a date of final inspection through 12/31/2012:</i></p> <p>“For each house plan with multiple configurations (e.g., orientations, elevations, options), the loads shall be permitted to be calculated for the configuration that will result in the largest load. The largest load shall be permitted to be used for equipment selection for all configurations, subject to the over-sizing limits of ACCA Manual S.</p>

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				<p>“For each house plan with multiple configurations, the room-level design airflows shall be permitted to be calculated using the configuration that resulted in the largest load.</p> <p><u>“For homes with a date of final inspection on or after 01/01/2013:</u></p> <p>“For each house plan with multiple configurations (e.g., orientations, elevations, options), the loads shall be calculated for each potential configuration. If the loads across all configurations vary by $\leq 25\%$, then the largest load shall be permitted to be used for equipment selection for all configurations, subject to the over-sizing limits of ACCA Manual S. Otherwise, the contractor shall group the load for each configuration into a set with $\leq 25\%$ variation and equipment selection shall be completed for each set of loads.</p> <p>“For each house plan with multiple configurations, the room-level design airflows shall be calculated for each potential configuration. If the design airflows for each room vary across all configurations by $\leq 25\%$ or 25 CFM, then the average room-level design airflow shall be permitted to be used when designing the duct system. Otherwise, the contractor shall group the room-level design airflow for each configuration into a set with $\leq 25\%$ or 25 CFM variation and the duct design shall be completed for the average airflow of that set.”</p> <p>For homes that will have final inspection dates on or prior to 12/31/2012, loads can be calculated and equipment can be selected based on the worst-case configuration, subject to the oversizing limits of ACCA Manual S. In this case, the heating and cooling loads do not need to be calculated for every configuration; only the loads for the worst-case configuration may be calculated. In the case of a home plan with an optional sunroom, the sunroom will typically be part of the worst-case configuration.</p> <p>For homes with final inspection dates on or after 1/1/2013, however, the loads for each configuration must be calculated. The largest load is then permitted to be used to select equipment (subject to the oversizing limits of ACCA Manual S) only if the loads across all configurations vary by no more than 25%.</p>
00047	07/25/2011	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 03)	Comment	Item 1.1 – Required flow rate for mechanical ventilation systems
				Issue: Partners have asked EPA how to calculate the required flow rate for intermittent and continuous ventilation systems under ASHRAE 62.2-2010. Partners have also asked if a control strategy in which the system delivers less than the required ventilation rate will meet the intent of Item 1.1.
				<p>Resolution: The ASHRAE standard defines the minimum required ventilation flow rate based upon the floor area, number of bedrooms, duration of the cycle time (i.e., the total time for one on-cycle and one off-cycle), and the fraction of time that the system is on during each cycle. Partners should consult the standard for the relevant equations.</p> <p>Item 1.1 requires a control strategy that delivers at least 100% of the minimum required</p>

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				ventilation rate, so strategies that deliver less than that amount are not acceptable. That is not to say that the ventilation system must run every hour. Because the ASHRAE standard considers the duration of the cycle time and the fraction of time that the system is on during each cycle, it is possible to design a ventilation system that does not operate every hour yet meets the requirements of the ASHRAE standard.
00048	07/25/2011	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 03)	Comment	Item 1.1 – Requirements for make-up air when using an exhaust-only ventilation system
				Issue: Partners have asked if make-up air or air inlets are required for exhaust-only ventilation systems.
				Resolution: ASHRAE 62.2-2010 does not require air inlets for exhaust only systems as long as the delivered ventilation rate meets the design ventilation rate.
00135	01/15/2012	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 04)	Comment	Item 1.1 – Whole house mechanical ventilation
				Issue: Partners have asked if a whole-house mechanical ventilation system must be installed in a home, even if the home can provide the ventilation rate required by ASHRAE 62.2-2010 through infiltration alone without any mechanical systems.
				Resolution: The ventilation rate defined in ASHRAE 62.2-2010 was derived assuming a default level of infiltration. The committee recently clarified that, per Section 4.1.2 of that standard, Licensed Design Professionals may certify homes as ASHRAE 62.2 compliant when the sum of the designed/measured natural (i.e. infiltration) and mechanical ventilation of the home meets or exceeds the sum of the Infiltration Credit (Section 4.1.3) and Ventilation Rate (Section 4.1) of the same home; excess infiltration over and above the default rate being an acceptable method for meeting the required whole-house ventilation rates. With that said, homes with high infiltration rates may have difficulty meeting other program requirements, such as meeting the mandatory air sealing requirements in Section 5 of the Thermal Enclosure System Rater Checklist and the ENERGY STAR HERS index target. Therefore, it is unlikely that qualified homes will be able to be built without a whole-house mechanical ventilation system and EPA does not recommend this practice.
00136	01/15/2012	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 04)	Comment	Item 2.2 – Ductilators
				Issue: Partners have asked whether a ductilator and hand calculations are permitted to be used to design duct systems according to ACCA Manual D or if software must be used.
				Resolution: Ductilators and hand calculations are permitted to be used to comply with ACCA Manual D. Duct design software tools are also permitted to be used, but are not required.
00049	07/25/2011	HVAC System Quality Installation Contractor Checklist	Clarification	Section 6 – Guidance on refrigerant charge test in cold weather
				Issue: This section notes that if cold weather makes it impossible to verify proper refrigerant charge, the system must include a TXV. Partners have asked EPA to define the cold weather conditions for which a refrigerant test is not possible.

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		(Version 3, Rev. 03)		<p>Resolution: To promote consistent enforcement of this exemption, EPA will revise the note in this section, as follows:</p> <p>“Note: If outdoor ambient temperature at the condenser is $\leq 55^{\circ}\text{F}$ or, if known, below the manufacturer-recommended minimum operating temperature for the cooling cycle, then the system shall include a TXV, and the contractor shall mark “N/A” on the checklist for Section 6 & 7.”</p>
00050	07/25/2011	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 03)	Change	Section 8 – Simplified electrical measurements
				<p>Issue: Partners have asked EPA to clarify which components contractors need to complete electrical measurements for and what the justification is for including watts as a test parameter. Regarding components, partners specifically questioned whether the condenser fan needed to be tested, given that this equipment is typically integral to the condenser unit and not easily accessible.</p>
				<p>Resolution: EPA’s intent was to align with the requirements of the ANSI/ACCA 5 QI-2007 protocol. This protocol requires that the contractor measure the line voltage, low voltage, and amperages for all components with rating plates to ensure that the difference between the measured and rating plate values are within the OEM’s tolerance. With this in mind, EPA will simplify and clarify the requirements by listing only the two most common components (i.e., the evaporator/air handler fan and the condenser unit) and by only requiring that the amperage and line voltage values be measured and reported. Therefore, Section 8 will be revised as follows:</p> <p>“8. Electrical Measurements – <i>Taken at electrical disconnect while component is in operation</i></p> <p>“8.1 Evaporator/air handler fan: ____ amperage ____ line voltage</p> <p>“8.2 Condenser unit: ____ amperage ____ line voltage</p> <p>“8.3 Electrical measurements within OEM-specified tolerance of nameplate value”</p>
00137	01/15/2012	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 04)	Refinement	Item 9.2 – Typographical error
				<p>Issue: EPA has identified a minor typographical error in Item 9.2.</p>
				<p>Resolution: The word “Cooing” in Item 9.2 will be revised to “Cooling”.</p>
00139	01/15/2012	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 04)	Comment	Footnote 22 – Inaccessible balancing dampers
				<p>Issue: Partners have asked how balancing dampers should be installed in ducts in flat attics where there is usually no access to balance the ducts once they are installed.</p>
				<p>Resolution: Footnote 22 clarifies where balancing dampers are permitted to be installed:</p> <p>“When balancing dampers are used, they shall be located at the trunk to limit noise unless the trunk will not be accessible when the balancing process is conducted. In such cases, Opposable Blade Dampers (OBD) or dampers located in the duct boot are permitted.”</p>

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				Alternatively, electronic dampers can be installed so that the system can be balanced without direct access to the ductwork.
00051	07/25/2011	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 03)	Change	Item 10.2 – Test and balance documentation
				Issue: This item requires that the contractor provide a “balancing report indicating quantity of supply and return terminals per room”. Partners have observed that contractors also need to provide the design flow rate for each supply register so that the Rater has the ability to verify that the proper free area opening has been provided for pressure balancing purposes.
				Resolution: EPA will edit this item to clarify the parameters that must be included, as follows: “Balancing report indicating, for each supply and return register: room name, design airflow, and final measured airflow”.
00052	07/25/2011	HVAC System Quality Installation Contractor Checklist (Version 3, Rev. 03)	Clarification	Item 12.1 – Drain pan for each HVAC component that produces condensate
				Issue: Partners have asked that EPA clarify that a drain pan is required for each piece of HVAC equipment that produces condensate (as opposed to having the contractor affirm just one per home).
				Resolution: EPA will revise this item as follows to clarify that each piece of HVAC equipment that produces condensate shall have a drain pan: “Corrosion-resistant drain pan, properly sloped to drainage system, included with each HVAC component that produces condensate”.
00053	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Comment	Footnote 1 – Verification requirements for homes with boilers
				Issue: Partners have asked who should complete this checklist if a home is equipped with a boiler and radiant floor heating.
				Resolution: The HVAC System Quality Installation Rater Checklist must be completed by the Rater, but in this case many items will be marked “Not Applicable”.
00151	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Refinement	Footnote 2 - Rater responsibility
				Issue: A grammatical error was identified in the text of Footnote 2.
				Resolution: To correct this error and to align with the language used in Footnote 1 of the Contractor Checklist, Footnote 2 will be revised to read: “The Rater is only responsible for ensuring that the Contractor has completed the Contractor Checklist in its entirety and verifying the discrete objective parameters referenced in Section 1 of this Checklist, not for assessing the accuracy of the load calculations or field verifications included or for verifying the accuracy of every input on the Contractor Checklist.”
00054	07/25/2011	HVAC System Quality Installation Rater Checklist	Comment	Item 1.2.9 – Sizing heat pumps in cold climates
				Issue: Partners have asked whether the listed total cooling capacity limits noted in Item 1.2.9 contain exemptions for heat pump systems in cold climates, as these systems are typically

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		(Version 3, Rev. 04)		<p>sized to the heating load, which can be significantly higher than the cooling load.</p> <p>Resolution: ACCA Manual S provides less stringent oversizing limits when the cooling load is substantially smaller than the heating load and adjustable-speed equipment is used. According to Manual S:</p> <p>“The allowable margin of excess capacity will depend on the relative size of the design cooling load and design heating load:</p> <ul style="list-style-type: none"> • “If the cooling load is substantially larger than the heating load, the limit on excess cooling capacity is identical to the limit that applies to single speed equipment. • “If the cooling load is substantially smaller than the heating load, an absolute limit on the amount of excess cooling capacity is not required because the equipment can be operated at a reduced capacity during the cooling season. However, this does not mean that the amount of excess cooling capacity is irrelevant. In this regard, the designer must make sure the system will provide adequate humidity control during any possible operating condition.” <p>Therefore, partners may use variable or dual-speed cooling equipment that does not meet the strict oversizing limits of Item 1.2.9 if the cooling load is substantially smaller than the heating load.</p> <p>In contrast, if the cooling load is substantially larger than the heating load, the same strict oversizing limits apply. In that case, Footnote 7 provides some flexibility to select equipment based on available equipment size increments, particularly for multi-speed equipment. Footnote 7 reads: “For cooling systems, the next largest nominal piece of equipment may be used that is available to satisfy the latent and sensible requirements. Single-speed systems generally have OEM nominal size increments of ½ ton. Multi-speed or multi-stage equipment may have OEM nominal size increments of one ton. Therefore, the use of these advanced system types can provide extra flexibility to meet the equipment sizing requirements.”</p>
00055	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Comment	<p>Item 1.3 – Acceptable documentation for whole-building mechanical ventilation design</p> <p>Issue: Partners have asked whether a manufacturer’s instruction sheet or a designer’s documentation showing run-time pattern requirements and control locations would meet the intent of Item 1.3, which requires that documentation be attached with the ventilation system type, location, design rate and frequency.</p> <p>Resolution: A designer’s documentation showing run-time pattern requirements would meet the intent of Item 1.3. A manufacturer’s instruction sheet may meet the intent of this requirement if it clearly identifies the ventilation design rate and frequency that has been selected for the rated home. That is to say, mechanical ventilation equipment can be run in multiple ways to meet the ventilation requirements of the ASHRAE standard and it may not be apparent from the instruction sheet alone which strategy has been selected. For example, a bathroom exhaust fan may be run continuously at one rate or intermittently at a higher rate to</p>

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				satisfy the requirement. If the designer indicates on the instruction sheet which ventilation design rate and frequency have been selected, then the intent for this item would be met.
00140	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Clarification	Section 2 – Whole-house mechanical ventilation system installation
				<p>Issue: Partners have noted that the heading in Section 2, Duct Quality Installation, indicates that the requirements of this Section apply to ventilation ducts. However, some of the Items in this Section do not seem generally applicable to homes in which the only forced-air system is a ventilation system (e.g., homes with hydronic heating systems and no air conditioning). Specifically, Partners have asked the following:</p> <ol style="list-style-type: none"> 1. Item 2.7 requires the Rater to verify the quantity and location of supply and return duct terminals based on a balancing report from the contractor. However, the Contractor Checklist does not indicate that Section 10 of that Checklist, Air Balancing, applies to ventilation ducts. Therefore, does Item 2.7 apply to such homes? <p>Item 2.8 requires that bedrooms be pressure-balanced. Partners have asked if it is truly EPA's intent to ensure that bedrooms are pressure-balanced in such homes.</p>
				<p>Resolution: The intent of requiring quality duct installation practices for ventilation ducts is to help ensure that ventilation system performance is not compromised by improper installation practices such as kinked, excessive, coiled, compressed, or inadequately supported ductwork. This intent is captured in Items 2.1 through 2.4, which apply to ventilation ducts.</p> <p>Items 2.5 and 2.6 help prevent excessive leakage and mitigate the risk of moisture problems caused by poor duct location and installation and also apply to ventilation ducts.</p> <p>ASHRAE 62.2-2010 does not prescribe room-level duct design requirements for the ventilation system. Therefore, Items 2.7 and 2.8 are not applicable to ventilation ducts and a new footnote will be added to the heading of Section 2 and to these two Items. The new footnote will read as follows: "Items 2.7 and 2.8 do not apply to ventilation ducts."</p>
00056	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Clarification	Item 2.8 – Bedroom door configuration for room pressure-balancing
				<p>Issue: Item 2.8 requires Raters to verify that bedrooms are pressure-balanced by either calculating the free area of vents and openings to the main body of the home or by testing the pressure differential between the bedroom and the home. Partners have asked whether, when testing the pressure differential, all bedroom doors should be closed or if only the door to the bedroom being tested should be closed. Partners have also asked if, when multiple air handlers are present in the home, all air handlers must be operating during the test or if only the air handler that serves the room being tested should be operating.</p>
				<p>Resolution: When testing room pressure balancing, all bedroom doors shall be closed and all air handlers shall be operating. Requiring that Raters close all bedroom doors and operate all air handlers during testing will improve the consistency of the test and is presumed to create a worst-case condition, which may occur during nighttime hours. Item 2.8 will be revised as</p>

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				<p>follows:</p> <p>“Bedrooms pressure-balanced using any combination of transfer grills, jump ducts, dedicated return ducts, and / or undercut doors to either: a) provide 1 sq. in. of free area opening per 1 CFM of supply air, as reported on the contractor-provided balancing report; or b) achieve a Rater-measured pressure differential ≤ 3 Pa (0.012 in. w.c.) with respect to the main body of the house when all bedroom doors are closed and all air handlers are operating.”</p>
00057	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Clarification	<p>Footnote 12 – Clarification of ducts that require insulation</p> <p>Issue: Partners have requested that EPA clarify the intent of Footnote 12. The footnote reads, “EPA recommends, but does not require, that all metal ductwork (e.g., exhaust ducts, duct boots) be insulated and that insulation be sealed to duct boots to prevent condensation.” To some partners, this language appears to contradict Section 3, which does require insulation for connections to trunk ducts in unconditioned spaces and for supply ducts in unconditioned attics. Partners have also asked whether Footnote 12 requires or recommends insulation on ducts in conditioned space.</p> <p>Resolution: In order to eliminate the apparent contradiction between Section 3 and Footnote 12, EPA will revise Footnote 12 to read as follows: “EPA recommends, but does not require, that all metal ductwork not encompassed by Section 3 (e.g., exhaust ducts, duct boots, ducts in conditioned space) also be insulated and that insulation be sealed to duct boots to prevent condensation.”</p>
				<p>Footnote 13 – Exemption for testing duct leakage</p> <p>Issue: Partners have asked if a home would still have to pass the total duct leakage test when testing of duct leakage to the outdoors is waived because a home’s envelope leakage is less than or equal to half the Prescriptive Path’s infiltration limit for its climate zone.</p> <p>Resolution: Per Footnote 13, the Rater is only exempted from testing the duct leakage to the outdoors if all ducts and air handling equipment are within conditioned space AND the infiltration is less than or equal to half the limit for that climate zone. If both of these criteria have been met, then the Rater is exempted from testing the duct leakage to the outdoors, but still must perform the total duct leakage test. There is no waiver for testing the total duct leakage.</p>
				<p>Item 4.1 – Total duct leakage limits</p> <p>Issue: Partners have expressed difficulty meeting the total duct leakage limit in Item 4.1 for homes with at least 1,200 sq. ft. of conditioned floor area (i.e., 6 CFM25 per 100 sq. ft. of conditioned floor area). Partners have provided feedback that this threshold is most challenging to achieve where building cavities are used as ducts and where ducts and air handlers are not completely sealed with mastic. For fully ducted and sealed systems, partners have indicated that they can consistently approach the threshold but that meaningfully more</p>
00058	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Comment	
00141	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Change	

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				<p>effort is required to move from just above the threshold (e.g., 8 CFM25 per 100 sq. ft. of conditioned floor area) to the threshold of 6 CFM25 per 100 sq. ft. of conditioned floor area.</p> <p>Resolution: Reducing total duct leakage can improve system efficiency, enhance occupant comfort, and minimize comfort and durability problems associated with pressurizing or depressurizing interstitial cavities in homes.</p> <p>Because of the high total duct leakage typically caused by panning, Item 4.2 prohibits using building cavities as supply or return ducts unless they meet the insulation and leakage requirements of Item 3.2, 3.3, 4.1, and 4.2. In cases where partners cannot meet these items, they must use other duct designs that do meet the minimum insulation levels and maximum leakage thresholds.</p> <p>However, to ease implementation for partners while retaining the value of a duct system with low total leakage compared to standard practice, Item 4.1 will be revised as follows: "Total Rater-measured duct leakage \leq 8 CFM25 per 100 sq. ft. of conditioned area."</p> <p>Partner feedback indicated that 8 CFM25 of total leakage per 100 sq. ft. of conditioned area is achievable in both large and small homes. Because the total duct leakage threshold will now be the same for all homes, Footnote 16, which addresses duct leakage thresholds for small homes ($< 1,200$ sq. ft.), will remove the reference to total duct leakage and will only apply to Item 4.1 and not to Item 4.2. In addition, to improve clarity, all exemptions related to duct testing will be merged into this Footnote. Footnote 16 will be revised as follows: "For homes that have $< 1,200$ sq. ft. of conditioned floor area, measured duct leakage to outdoors shall be ≤ 5 CFM25 per 100 sq. ft. of conditioned floor area. Testing of duct leakage to the outside can be waived if all ducts & air handling equipment are located within the home's air and thermal barriers AND envelope leakage has been tested to be less than or equal to half of the Prescriptive Path infiltration limit for the Climate Zone where the home is to be built. Alternatively, testing of duct leakage to the outside can be waived if total duct leakage is ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area, or ≤ 5 CFM25 per 100 sq. ft. of conditioned floor area for homes that have less than 1,200 sq. ft. of conditioned floor area."</p>
00142	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Comment	<p>Item 4.1 & Item 4.2 - Duct Leakage test procedures</p> <p>Issue: Partners have asked whether, when sealing a register grille to conduct duct leakage tests, only the face of the grille should be sealed or if the perimeter of the grille should also be sealed to the surface beneath (e.g., drywall, carpet, flooring).</p> <p>Resolution: Duct leakage test procedures are defined by the RESNET Mortgage Industry National Home Energy Rating System Standards. Appendix A prescribes ASHRAE Standard 152 with several additions and exceptions that are unrelated to how register grilles are to be sealed. ASHRAE 152 contains the following guidance:</p> <ul style="list-style-type: none"> When testing supply-side leakage to the outside: "Seal all the registers except those selected in this step."

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				<ul style="list-style-type: none"> When testing return-side leakage to the outside: “Ensure that all other registers are sealed...” When testing total leakage: “Seal all the register grilles or boots.” <p>Partners are variously interpreting this language to prohibit sealing the perimeter of register grilles, to require sealing the perimeter of register grilles, or to leave the issue up to Providers’ discretion.</p> <p>Until RESNET and / or ASHRAE clarifies the duct leakage testing procedure that Raters are to follow, EPA will consider leakage results from either method (i.e., from sealing only the register face, or from sealing both the register face and perimeter) to be acceptable for the purpose of verifying Items 4.1 and 4.2.</p>
00059	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Comment	Item 4.3 – Sealing of duct boots
				Issue: Partners have asked EPA to clarify if drywall mud is an acceptable material for sealing duct boots to floors, walls, and ceilings.
				Resolution: Drywall mud is not designed for this application because it can become brittle and can crack after drying, preventing an airtight seal between the duct boot and the surrounding surface. For this reason, drywall mud is not an acceptable material for the purpose of meeting this item.
00143	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Change	Item 4.3 – Duct boot sealing
				Issue: Partners have asked if duct boots must be sealed to the ceiling per Item 4.3 when the space above the ceiling is within the thermal and pressure boundary of the home. For example, must duct boots be sealed to the ceiling of the first floor if a conditioned second story is above, or if a cathedralized attic is above?
				Resolution: Because Item 4.1 already limits total duct leakage throughout the duct system, Item 4.3 will be removed so that partners can use their judgment to determine when to seal and inspect duct boots. Note that duct boots will often need to be sealed to floors, walls, and ceilings to meet the total duct leakage limit. This change simply removes duct boot sealing as a mandatory requirement for qualification.
00060	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Comment	Item 5.1 – Validation of contractor-selected ventilation design rate
				Issue: Partners have asked how they should verify that the design ventilation rate selected by the contractor and listed in Item 2.11 of the HVAC System Quality Installation Contractor Checklist (Rev. 03) was properly calculated.
				Resolution: Item 5.1 requires that the Rater-verified ventilation rate be within 100-120% of the HVAC Contractor design value. The wording is important, because it’s not the Rater’s responsibility to determine whether the contractor-reported value is compliant with the

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				ASHRAE 62.2-2010 standard, only that the Rater-measured ventilation rate is within the tolerance of the contractor-reported value. In cases where the Rater is knowledgeable about the ASHRAE standard and believes that the contractor-reported design value is incorrect, the Rater is encouraged to share that observation with the contractor and builder as an educational opportunity.
00144	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Comment	Item 5.1 – Whole-house ventilation rate
				Issue: Item 5.1 requires that the Rater-measured ventilation rate be within 100-120% of the HVAC contractor design value. Partners have asked if this requirement can be met by installing a bath fan with a controller that is marketed to meet ASHRAE 62.2-2010 (e.g., with a setting based on the number of bedrooms in the home and the conditioned floor area of the home).
				Resolution: A bath fan combined with a controller that is set to operate the fan according to the run-time requirements of ASHRAE 62.2-2010 can be used to meet the intent of this Item, as long as the system's ventilation rate is measured by the Rater and verified to be 100-120% of the HVAC contractor design value.
00061	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Change	Item 6.2 – Guidance on cool air flow test in cold weather
				Issue: This item requires the Rater to assess whether cool air flow is produced when the cooling cycle is energized. EPA has received feedback that the cool air flow test should not be performed below a certain temperature because of the potential for liquid line slugging.
				Resolution: EPA will add a new footnote that provides an exemption for this test when the outdoor temperature is below a specific threshold to prevent possible equipment damage, as follows: “To prevent potential equipment damage, the Rater shall not conduct this test if the outdoor temperature is $\leq 55^{\circ}\text{F}$ or, if known, below the manufacturer-recommended minimum operating temperature for the cooling cycle. When this occurs, the Rater shall mark ‘N/A’ on the checklist for this item.”
00062	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Clarification	Item 6.5 – Labeling ventilation controls
				Issue: Partners have expressed confusion about whether Item 6.5, “Ventilation controls labeled, unless function is obvious (e.g., bathroom exhaust fan)”, requires or does not require labeling of bathroom exhaust fan controls.
				Resolution: EPA intended this requirement to align with the requirement for labeling ventilation controls in ASHRAE 62.2-2010. EPA will revise the requirement to read as follows: “Function of ventilation controls is obvious (e.g., bathroom exhaust fan) or, if not, controls have been labeled.”
00063	07/25/2011	HVAC System Quality Installation	Change	Item 7.2 – Air inlet height requirements for North Carolina
				Issue: Partners in North Carolina have noted that the ventilation air inlet height requirement is

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		Rater Checklist (Version 3, Rev. 03)		<p>significantly greater than historical records of snowfall for this state and would be particularly problematic for homes with HVAC equipment in crawlspaces or basements.</p> <p>Resolution: EPA will permit the use of reduced ventilation air inlet heights in North Carolina. The minimum required height in North Carolina for Climate Zone 4 will be reduced from 4 feet to 2 feet and in Climate Zone 5 from 4 feet to 2.5 feet based on historical snowfall data for this state. Note that EPA is evaluating the potential to reduce inlet heights in other regions based upon historical snowfall data.</p>
00064	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Clarification	<p>Section 8 – Requirements for local mechanical exhaust</p> <p>Issue: Partners have expressed confusion about whether Section 8 requires local mechanical exhaust systems to be installed and meet the requirements of Section 8, or if it simply requires that local mechanical exhaust systems, where installed, meet the requirements of Section 8.</p> <p>Resolution: EPA will revise the requirements for Section 8 to read as follows: “In each kitchen and bathroom, a system shall be installed that exhausts directly to the outdoors and meets one of the following Rater-measured airflow standards:”</p>
00065	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Comment	<p>Section 8 – Local mechanical exhaust locations</p> <p>Issue: Partners have asked if all kitchen exhaust fans must exhaust to the exterior. Partners have also asked if recirculating (non-vented) above-the-range hood fans meet the intent of the requirements in Section 8.</p> <p>Resolution: Each kitchen must have at least one exhaust system that vents to the outdoors. Fans that recirculate air and do not exhaust to the outdoors do not meet the intent of Section 8. For example, a kitchen is permitted to have a recirculating fan above-the-range hood, but to meet the intent of Section 8 the kitchen must also have an exhaust fan (e.g., wall-mounted, ceiling-mounted) that vents directly to the outdoors.</p>
00145	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Comment	<p>Section 8 – Whole-house ventilation system location</p> <p>Issue: Partners have asked if a fan in a kitchen or bathroom can be used to meet both the requirement for local mechanical exhaust in Section 8 and the requirement for whole-house ventilation in Section 1 of the HVAC System Quality Installation Contractor Checklist.</p> <p>Resolution: Section 1 of the HVAC System Quality Installation Contractor Checklist requires that a whole-house ventilation system that meets ASHRAE 62.2-2010 requirements be installed but does not prescribe a specific system type or location. Therefore, a fan located in a kitchen or bathroom is permitted to provide both local mechanical exhaust and whole-house ventilation if it meets all the requirements of Section 1 of the HVAC System Quality Installation Contractor Checklist and Section 8 of the HVAC System Quality Installation Rater Checklist.</p>
00146	01/15/2012	HVAC System	Comment	Item 8.1 – Local mechanical exhaust rates

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		Quality Installation Rater Checklist (Version 3, Rev. 04)		<p>Issue: Item 8.1 requires that a local mechanical exhaust system be installed in each kitchen that provides either ≥ 5 air changes per hour (ACH) based on kitchen volume, if operating continuously, or ≥ 100 CFM, if operating intermittently. Footnote 28 further clarifies that if the flow rate of an intermittent exhaust fan is less than 5 ACH, based on kitchen volume, then a vented range hood or appliance-range hood combination is required rather than a remote fan that is not integral to the range.</p> <p>Partners have asked how to assess whether an intermittent fan meets the 5 ACH requirement.</p> <p>Resolution: The ability of an intermittent fan to meet the 5 ACH requirement is permitted to be assessed using the flow rate that would be produced if the fan was operating continuously for an hour, even if the fan may actually be operated intermittently in the home.</p>
00066	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Comment	<p>Section 9 – Static pressure test conditions</p> <p>Issue: Partners have asked whether there are any specific conditions or procedures for static pressure readings in the supply and return ducts.</p> <p>Resolution: The HVAC system shall be in operation, and the supply and return duct static pressures shall be measured at the locations noted in Footnote 21. EPA is considering whether to develop a more formal test procedure for this requirement.</p>
00067	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Clarification	<p>Item 9.1 – Definition of remote-mounted fans</p> <p>Issue: Partners have asked EPA to clarify whether a remote-mounted fan is exempt from the sound rating requirement based on its location alone or if the fan must also have ≥ 4 ft ductwork between the fan and intake grills.</p> <p>Resolution: To improve the clarity of the definition for a remote-mounted fan, the portion of the associated footnote that defines this term will be clarified as follows: “Fans exempted from this requirement include HVAC air handlers and remote-mounted fans. To be considered for this exemption, a remote-mounted fan must be mounted outside the habitable spaces, bathrooms, toilets, and hallways and there shall be ≥ 4 ft. ductwork between the fan and intake grill. Per ASHRAE 62.2-2010, habitable spaces are intended for continual human occupancy; such space generally includes areas used for living, sleeping, dining, and cooking but does not generally include bathrooms, toilets, hallways, storage areas, closets, or utility rooms.”</p>
00147	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Clarification	<p>Item 9.1 & 9.2 – Sound limits for multispeed local mechanical exhaust fans</p> <p>Issue: Partners have asked at which speed fans must meet the sone limits in Items 9.1 and 9.2. Partners have also expressed difficulty finding multispeed ventilation and exhaust fans that meet those limits.</p> <p>Resolution: Multispeed fans must meet the sone limits of Items 9.1 or 9.2 when producing no less than the minimum airflow rate required by Section 8. In order to clarify this requirement, Item 9.1 will be revised as follows: “Intermittent supply and exhaust fans rated at ≤ 3 sones by</p>

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				<p>mfr. when producing no less than the minimum airflow rate required by Section 8 of this Checklist, unless rated flow ≥ 400 CFM.” Additionally, Item 9.2 will be revised as follows: “Continuous supply & exhaust fans rated at ≤ 1 sone by mfr. when producing no less than the minimum airflow required by Section 8 of this Checklist.”</p> <p>All ENERGY STAR qualified bathroom fans (and range hoods) have sound ratings of 3 sones or less and, therefore, may be good candidates to meet Item 9.1. A list of qualified ventilation fans and retail locations has been posted in the “Fans, Ventilating Resources” column at the right of the page at http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=VF, which is also accessible by visiting www.energystar.gov, clicking on “Find ENERGY STAR Products” in the “Products” box, and then clicking on “Fans, Ventilating” under the “Heating & Cooling” heading.</p>
00068	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Clarification	<p>Item 10.1 – Test requirements for naturally drafted combustion appliances</p> <p>Issue: Partners have asked which specific combustion safety tests are required to be performed in homes with a natural draft combustion appliance inside the pressure boundary. Also, EPA has determined that the phrase “atmospherically vented” is better expressed as “natural draft” or “naturally drafted”.</p> <p>Resolution: For improved clarity, EPA will replace the phrase “atmospherically vented equipment” with the phrase “naturally drafted equipment” and add a definition to Footnote 27, as follows:</p> <p>“Per the 2009 International Mechanical Code, a direct-vent appliance is one that is constructed and installed so that all air for combustion is derived from the outdoor atmosphere and all flue gases are discharged to the outside atmosphere; a mechanical draft system is a venting system designed to remove flue or vent gases by mechanical means consisting of an induced draft portion under non-positive static pressure or a forced draft portion under positive static pressure; and a natural draft system is a venting system designed to remove flue or vent gases under nonpositive static vent pressure entirely by natural draft.”</p> <p>To clarify the tests required to demonstrate compliance with Item 10.1, this item will be revised as follows: “Furnaces, boilers, and water heaters located within the home’s pressure boundary are mechanically drafted or direct-vented. As an exception, naturally drafted equipment is allowed in Climate Zone 1-3. For naturally drafted furnaces, boilers, and water heaters, the Rater has followed RESNET or BPI combustion safety test procedures and met the selected standard’s limits for depressurization, spillage, draft pressure, and CO concentration in ambient air, as well as a CO concentration in the flue of ≤ 25 ppm.”.</p>
00069	07/25/2011	HVAC System Quality Installation Rater Checklist	Clarification	<p>Item 10.2 – Combustion safety testing for fireplaces</p> <p>Issue: Item 10.2 provides two options for evaluating the likelihood that a fireplace will backdraft in a home. One option is to verify that the total net rated exhaust flow of the two largest fans</p>

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		(Version 3, Rev. 03)		<p>(excluding summer cooling fans) is ≤ 15 CFM per 100 sq. ft. of occupiable space. The second option is to conduct BPI or RESNET's combustion safety test procedure and verify that the worst-case depressurization is ≤ 5 Pa. Partners have asked EPA to clarify which specific test procedure is required to demonstrate compliance with the second option. Partners have also asked EPA to clarify if the net change in pressure between the baseline and worst-case depressurization conditions should be expressed as -5 Pa, rather than 5 Pa.</p> <p>Resolution: EPA will clarify that the second compliance option for Item 10.2 is to conduct a worst-case depressurization test using the RESNET or BPI combustion safety test procedure. The one modification will be that for the RESNET procedure, the blower door will not be set to exhaust 300 CFM to simulate the fireplace in operation.</p> <p>In addition, EPA will clarify that the net change in pressure within the combustion zone between the baseline and worst-case depressurization conditions should not exceed -5 Pa, rather than 5 Pa.</p> <p>Item 10.2 will read as follows: "For fireplaces that are not mechanically drafted or direct-vented to outdoors, total net rated exhaust flow of the two largest exhaust fans (excluding summer cooling fans) is ≤ 15 CFM per 100 sq. ft. of occupiable space when at full capacity or the Rater has verified that the pressure differential is ≤ -5 Pa using BPI's or RESNET's worst-case depressurization test procedure." Footnote 29 will have the following sentence added to the end: "If using RESNET's protocol to evaluate fireplaces, per Item 10.2, the blower door will not be set to exhaust 300 CFM to simulate the fireplace in operation. The remainder of the protocol for determining worst-case depressurization shall be followed."</p>
00148	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Comment	Item 10.2 – Direct-vented appliances
				Issue: Partners have asked what the definition of a direct-vented appliance is and how to determine if a fireplace is directly vented to the outdoors.
				Resolution: Per the 2009 International Mechanical Code, a direct-vent appliance is one that is constructed and installed so that all air for combustion is derived from the outdoor atmosphere and all flue gases are discharged to the outside atmosphere. A direct-vent fireplace has a fresh air inlet to supply air for combustion and also has a flue that vents combustion gases directly to the outdoors.
00070	07/25/2011	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 03)	Clarification	Item 10.3 – Ambient CO test procedure for unvented combustion appliances
				<p>Issue: Item 10.3 requires Raters to conduct BPI or RESNET's combustion safety tests when unvented combustion appliances are present. However, partners have noted that unvented combustion appliances are prohibited in homes by the BPI standards, so there are no combustion safety tests for unvented combustion appliances in the BPI Standards.</p> <p>In addition, Item 10.3 requires that ambient CO levels not exceed 35 ppm. However, ambient CO levels are typically measured and monitored while conducting other combustion safety tests for vented combustion appliances. Partners have indicated that in the case of unvented</p>

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				<p>combustion appliances, the procedure is unclear, particularly how long the unvented appliance should be operated before assessing the ambient CO level.</p> <p>Resolution: EPA will explicitly describe the test procedure to be executed for unvented combustion appliances. Item 10.3 will read as follows: "If unvented combustion appliances other than cooking ranges are located inside the home's pressure boundary, the Rater has operated the appliance for at least 10 minutes and verified that the ambient CO level does not exceed 35 ppm."</p>
00150	01/15/2012	HVAC System Quality Installation Rater Checklist (Version 3, Rev. 04)	Comment	Rater Company Name field and Date Checklist Inspected field
				Issue: Partners have asked if the Rater Company Name and the Date Checklist Inspected fields are required to be completed for every home.
				Resolution: The Rater company name and date that the Checklist was inspected must be documented each time the Checklist is filled out.
00152	01/15/2012	Water Management System Builder Checklist (Version 3, Rev. 04)	Comment	Use of "Must Correct" column
				Issue: Partners have asked when an item should be designated as "Must Correct".
				Resolution: An item must be marked as "Must Correct" when it has been inspected and does not meet the intent of that item.
00157	01/15/2012	Water Management System Builder Checklist (Version 3, Rev. 04)	Refinement	Footnote 2 - Rater verification of Checklist
				Issue: Partners have asked EPA to clarify language related to Raters' responsibilities when verifying the Water Management System Builder Checklist.
				Resolution: To better convey the policy intent and align with the language used elsewhere related to Raters' responsibilities, Footnote 2 will be revised to read: "Upon completion, the builder shall return the Checklist to the Rater for review. Alternatively, at the discretion of the builder and Rater, the Rater may verify any item on this Checklist. When this occurs, the Rater shall check the box of the verified items in the Rater Verified column. The Rater is only responsible for ensuring that the builder has completed the Builder Checklist in its entirety and for verifying the items that are checked in the Rater Verified column (if any). The Rater is not responsible for assessing the accuracy of the field verifications for items in this Checklist that are not checked in the Rater Verified column. Instead, it is the builder's exclusive responsibility to ensure the design and installation comply with the Builder Checklist."
00071	07/25/2011	Water Management System Builder Checklist (Version 3, Rev. 03)	Comment	Footnote 4, 5, and 11 – Site-level versus community-level soil reports
				Issue: Partners have asked if soil reports performed for the Water Management System Builder Checklist are valid for a single home or an entire community.
				Resolution: The certified hydrologist, soil scientist, or engineer should be the one to determine whether their evaluation is applicable to a single site or to an entire community. Ultimately, the

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				<p>reported soil conditions must be valid for each home qualified.</p> <p>For example, if the soil expert determines that he/she can evaluate the soil conditions across multiple lots in one visit, then only a single assessment will be needed. Conversely, if the soil expert determines that he/she can only assess the soil conditions for a single lot at a time, then multiple assessments will be needed.</p>
00072	07/25/2011	Water Management System Builder Checklist (Version 3, Rev. 03)	Change	<p>Item 1.2 – Alternative to Tamping Back-Fill</p> <p>Issue: Some partners have indicated that rather than tamping back-fill to prevent settling, they schedule a site visit after the close of the home to evaluate settling conditions, provide in-fill as needed, and complete final grading. They have requested that EPA permit this process be used to satisfy the intent of Item 1.2.</p> <p>Resolution: EPA will permit this process to be used to meet the intent of Item 1.2. Item 1.2 will be revised as follows: “Back-fill has been tamped and final grade sloped ≥ 0.5 in. per ft. away from home for ≥ 10 ft. See footnote for alternatives.”</p> <p>The accompanying footnote will be revised as follows: “Where setbacks limit space to less than 10 ft., swales or drains designed to carry water from foundation shall be provided. Also, tamping of back-fill is not required if either: proper drainage can be achieved using non-settling compact soils, as determined by a certified hydrologist, soil scientist, or engineer; OR, the builder has scheduled a site visit to provide in-fill and final grading after settling has occurred (e.g., after the first rainy season).”</p>
00073	07/25/2011	Water Management System Builder Checklist (Version 3, Rev. 03)	Change	<p>Item 1.3 – Drainage layer under slabs</p> <p>Issue: Several builders have expressed dissatisfaction with Item 1.3. Specifically, some builders are reluctant to install the layer of aggregate or sand with geotextile matting because they claim it adds additional cost to the home without providing any benefit.</p> <p>Separately, partners have offered the feedback that radon mitigation systems that do not include polyethylene sheeting can be effective, but that EPA’s requirement for polyethylene sheeting would prevent homes with such systems from qualifying.</p> <p>Resolution: The primary purpose of the layer of aggregate or sand with geotextile matting is to protect the slab from frost heave, which can occur when water freezes in the soil beneath the slab and expands. However, there is no definitive language in the Residential Building Code that requires a drainage layer beneath all slabs. Furthermore, there are many alternative building practices employed around the country that do not rely on a drainage layer. Therefore, EPA will remove the explicit requirement for a layer of aggregate or sand with geotextile matting.</p> <p>The layer of polyethylene sheeting remains a mandatory requirement, except in dry climates where water intrusion to the slab is not a major concern, because it provides a capillary break beneath the slab.</p>

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				<p>To accommodate more diverse building practices, Item 1.3 will be revised to read as follows: “Capillary break beneath all slabs (e.g., slab on grade, basement slab) except crawlspace slabs using ≥ 6 mil polyethylene sheeting lapped 6-12 in. or ≥ 1” extruded polystyrene insulation with taped joints.”⁵”</p> <p>Additionally, Footnote 5 will be revised to read: “5. Polyethylene sheeting is not required in Dry (B) climates as shown in 2009 IECC Figure 301.1 and Table 301.1. Polyethylene sheeting is also not required for raised pier foundations with no walls. To earn the ENERGY STAR, EPA recommends, but does not require, that radon-resistant features be included in homes built in EPA Radon Zones 1, 2 and 3. For more information, see www.epa.gov/indoorairplus.”</p>
00153	01/15/2012	Water Management System Builder Checklist (Version 3, Rev. 04)	Comment	Item 1.3 – Capillary break beneath slabs for gut rehabs
				Issue: Partners have asked if gut rehab projects can meet the intent of Item 1.3, which requires a capillary break beneath all slabs except for crawlspace slabs, by installing a vapor barrier on top of a slab.
				<p>Resolution: Historically, EPA has allowed existing homes to earn the ENERGY STAR if all requirements of the guidelines have been met. This policy has not changed, though EPA does recognize that it will be more challenging for existing homes to meet all requirements of the guidelines under Version 3 of the program. In the future, EPA may identify the most challenging items and develop alternate details that meet the same intent, thereby allowing existing homes to more easily qualify.</p> <p>With regards to Item 1.3, one alternate that may be used to meet the intent of this item is to construct a rat slab. This building technique calls for the builder to install a layer of polyethylene sheeting on top of an existing slab and then to pour a thin slab that is approximately 2 inches thick over the polyethylene sheeting. This secondary rat slab improves foundation assembly durability by providing a capillary break and protecting the polyethylene sheeting from tearing. For more information about rat slabs, please refer to guidance provided on EPA’s Indoor airPLUS website at the following link: http://www.epa.gov/indoorairplus/technical/moisture/1_2.html.</p>
00074	07/25/2011	Water Management System Builder Checklist (Version 3, Rev. 03)	Comment	Item 1.4.2 – Fastening options for polyethylene sheeting on crawlspace floors
				Issue: Partners have asked whether polyethylene sheeting on the floor of a crawlspace is required to be sealed at the edges with tape or mastic.
				Resolution: The polyethylene sheeting installed on the crawlspace floor is not required to be sealed with tape or mastic at the edges. However, the sheeting is required to be lapped 6-12 inches in addition to being either lapped up each wall enough to be fastened or secured in the ground at the perimeter using stakes.
00075	07/25/2011	Water Management	Comment	Item 2.1 – Flashing at bottom of exterior walls

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		System Builder Checklist (Version 3, Rev. 03)		<p>Issue: Partners have expressed concern about the difficulty of including flashing at the bottom of wood-framed walls over crawl spaces and slabs where the vinyl siding hangs below the bottom plate and sheathing.</p> <p>Resolution: This is a mandatory requirement for all ENERGY STAR homes and cannot be waived, but it can be met through an “equivalent drainage system.” If builders have questions about whether a specific wall assembly meets this requirement, they should submit a brief description of such a system and supporting pictures or drawings to energystarhomes@energystar.gov.</p>
00076	07/25/2011	Water Management System Builder Checklist (Version 3, Rev. 03)	Comment	<p>Item 2.3 – Flexible flashing products</p> <p>Issue: Partners have asked if flexible pan flashing products may be used to meet Item 2.3 or if rigid products are required.</p> <p>Resolution: Item 2.3 does not specify whether pan flashing must be flexible or rigid. As long as a material is water impermeable, attaches durably to the frame, and can be integrated with other materials to create a continuous drainage plane, it meets the intent of Item 2.3.</p>
00077	07/25/2011	Water Management System Builder Checklist (Version 3, Rev. 03)	Clarification	<p>Item 2.3 – Window and door openings fully flashed</p> <p>Issue: Partners have asked if the American Architectural Manufacturers Association’s (AAMA) Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction fulfills the requirements of Item 2.3. Partners have also asked whether pan flashing is required to extend up onto the side jambs.</p> <p>Resolution: In homes where water penetrates the window assembly, it will drain to the lowest point, which is the sill framing member. Item 2.3 is intended to help minimize the potential for water damage by fully flashing the windows. This includes applying the pan flashing over the rough sill framing, inclusive of the corners of the sill framing.</p> <p>Therefore, the AAMA Standard Practice document does not meet the intent of Item 2.3. This is because the document does not require the pan flashing to be applied over the rough sill framing.</p> <p>To clarify the intent of Item 2.3, the accompanying footnote will be revised as follows: “Apply pan flashing over the rough sill framing, inclusive of the corners of the sill framing; side flashing that extends over pan flashing; and top flashing that extends over side flashing.”</p>
00079	07/25/2011	Water Management System Builder Checklist (Version 3, Rev. 03)	Comment	<p>Item 3.2 – Expansive or collapsible soils</p> <p>Issue: Partners have asked if builders need to obtain a soil assessment for every home to comply with Item 3.2.</p> <p>Resolution: Only a home that is built in expansive or collapsible soils and that does not have a slab on grade foundation is required to meet Item 3.2.</p> <p>Therefore, if the home has a slab on grade foundation, the builder is not required to obtain a</p>

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				<p>soil assessment and can mark this item as 'N/A'. Additionally, if the home is built with properly installed gutters & downspouts, it meets this requirement regardless of soil type and the builder is not required to obtain a soil assessment.</p> <p>A soil assessment is only needed for a home that does not have a slab on grade foundation and for which the builder needs to demonstrate that the soil is not expansive or collapsible so as to avoid the installation of gutters and downspouts.</p>
00154	01/15/2012	Water Management System Builder Checklist (Version 3, Rev. 04)	Clarification	<p>Item 4.2 – Alternatives to cement board</p> <p>Issue: Partners have asked if the Schluter-KERDI shower system, a waterproof membrane designed to be installed over drywall behind ceramic and stone tile coverings, can be used to meet the intent of Item 4.2, which requires “cement board or equivalent moisture-resistant backing material” behind tub and shower enclosures composed of tile or panel assemblies with caulked joints. Partners have noted that this product has been evaluated by the ICC Evaluation Service according to AC 115 – Acceptance Criteria for Waterproof Membranes for Flooring and Shower Lining.</p> <p>Resolution: The Schluter-KERDI shower system meets the intent of Item 4.2. AC 115 establishes standards regarding physical performance (ANSI A118.10-1999 Load Bearing, Bonded, Waterproof Membranes For Thin-set Ceramic Tile and Dimension Stone Installations), durability, and installation instructions. Materials that have passed such evaluations are “equivalent moisture-resistant backing materials” and meet the intent of Item 4.2 by helping to ensure that drywall behind them will not be exposed to water, thereby minimizing problems with mold, mildew, and water damage. To minimize the potential for mold growth, paper-faced backerboard must meet mold-resistant standards ASTM D3273 or ASTM D6329 when installed behind waterproof membranes evaluated according to AC 115.</p> <p>Footnote 13 will be revised as follows:</p> <p>“In addition to cement board, materials that have been evaluated by ICC-ES according to AC 115, Acceptance Criteria for Waterproof Membranes for Flooring and Shower Lining, may also be used to meet this requirement. Monolithic tub and shower enclosures (e.g., fiberglass with no seams) are exempt from this backing material requirement unless required by the manufacturer. Paper-faced backerboard may only be used behind monolithic enclosures or waterproof membranes that have been evaluated by ICC-ES according to AC 115, and then only if it meets ASTM mold-resistant standards ASTM D3273 or ASTM D6329.”</p>
00155	01/15/2012	Water Management System Builder Checklist (Version 3, Rev. 04)	Comment	<p>Item 4.2 – Use of Thermoply</p> <p>Issue: Partners have asked if Thermoply is a paper-faced product and if it can be used to meet the intent of Item 4.2, which prohibits paper-faced backerboard from being used on walls behind tub and shower enclosures composed of tile or panel assemblies with caulked joints.</p> <p>Resolution: Thermoply is a paper-faced product and does not comply with Item 4.2 except when coupled with a moisture-resistant backing material. The intent of Item 4.2 is to ensure</p>

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				that backing material installed behind tile and panel assemblies is not susceptible to mold, mildew, or other water damage.
00156	01/15/2012	Water Management System Builder Checklist (Version 3, Rev. 04)	Comment	Builder Employee field
				Issue: Partners have asked if the Builder Employee field is required to be completed for every home.
				Resolution: The builder employee name must be documented if any items on the Checklist are marked "Builder Verified".
00080	07/25/2011	HERS Index Target Procedure for National Program Requirements (Version 3, Rev. 03)	Refinement	Crawlspace wall insulation characteristics
				Issue: Partners have noted that for homes with crawlspace foundations, the Expanded ENERGY STAR Reference Design Definition requires that the crawlspace conditioning type always be vented and therefore configured with floor insulation. Therefore, references in this document to unvented crawlspaces and to crawlspace wall insulation are irrelevant.
				Response: To improve clarity, references to unvented crawlspaces and crawlspace wall insulation will be removed from the Building Component section for Foundations, as follows: <ul style="list-style-type: none"> The first bullet in the Insulation section will be revised to state, "Basement Wall Assembly U-factor only applies to conditioned basements; if applicable, insulation shall be located on interior side of walls". A new bullet will be added, stating, "Floor assemblies above crawlspace foundations shall be configured to meet the applicable floor assembly U-factor listed in the building component section for Floors over Unconditioned Spaces". The line item listing Crawlspace Wall Assembly U-Factor values will be deleted.
00081	07/25/2011	HERS Index Target Procedure for National Program Requirements (Version 3, Rev. 03)	Change	Determining gross basement wall area
				Issue: Partners have expressed difficulty determining the percentage of gross basement wall area that is below grade when walls are not in contact with either the ground or outdoor ambient air. This occurs, for example, when a wall separates the basement spaces of adjacent townhome units.
				Response: EPA intended to exclude walls that are not in contact with either the ground or outdoor ambient air because of the difficulty of determining the area of the above-grade and below-grade portions of those walls. The beginning of Footnote 1 will be revised to read as follows: "To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above)."
00082	07/25/2011	HERS Index Target	Change	Basement exclusion from Size Adjustment Factor

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		Procedure for National Program Requirements (Version 3, Rev. 03)		<p>Issue: Partners have asked EPA to allow bedrooms in basements to be included when determining the Benchmark Home Size. In the rare instances where the majority of bedrooms in a home are located in the basement, excluding these bedrooms can result in the application of a significant Size Adjustment Factor, resulting in a meaningfully more stringent ENERGY STAR HERS Index Target.</p> <p>Response: To eliminate this hardship for these homes, EPA will now allow all bedrooms in the home to be counted when determining the Benchmark Home Size, regardless of location. This policy change will result in the same or less stringent target for all partners. Note that no change is being made to EPA's policy of excluding floor area in basements with at least half of the gross surface area of the exterior walls below grade. That is to say, floor area in basements with at least half of the gross surface area of the basement's exterior walls below grade shall not be counted when determining a home's Benchmark Home Size, Size Adjustment Factor, and eligibility to use the Prescriptive Path.</p> <p>The document will be revised as follows:</p> <ul style="list-style-type: none"> The last paragraph of Step 2 will be revised as follows: "For the purposes of this step, calculate the number of bedrooms and the CFA of the home to be built using RESNET standards with the following exception: floor area in basements with at least half of the gross surface area of the basement's exterior walls below grade shall not be counted. If the CFA of the home to be built exceeds the CFA of the Benchmark Home, then the Performance Path shall be used. Because the SAF cannot exceed 1.0, it only modifies the HERS Index Target for homes with conditioned floor area greater than the Benchmark Home. For condos and apartments in multi-family buildings the SAF shall always equal 1.0. Footnote 1 will be revised as follows; "To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above). Note that this change is only for the purpose of determining a home's Benchmark Home Size, Size Adjustment Factor, and eligibility to use the Prescriptive Path. The full conditioned floor area, per RESNET's standards, should be used when rating the home (e.g., determining compliance with duct leakage requirements). If a home has zero bedrooms with regard to the Benchmark Home Size determination, then the Benchmark Home Size for one bedroom shall be used."
00158	01/15/2012	HERS Index Target Procedure for National Program Requirements (Version 3, Rev. 04)	Comment	Glazing area
				Issue: Partners have asked if windows located in the basement of the Rated Home should be included when calculating the glazing area of the ENERGY STAR Reference Design Home.
				Resolution: If the basement of the Rated Home is conditioned, then the glazing area in the

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				basement should be included when configuring the ENERGY STAR Reference Design Home. Note that the glazing area of the ENERGY STAR Reference Design Home is capped at 15% of the conditioned floor area of the Rated Home. If the basement of the Rated Home is not conditioned, then the glazing area in the basement should be excluded.
00159	01/15/2012	County-Level Reference Design Climate Zones 1-8 (Version 3, Rev. 04)	Clarification	Partnership, Training, and Credentialing Requirements
				Issue: Partners have asked for clarification about the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes.
				<p>Resolution: A section will be added to clarify the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes. This new section will appear after the “ENERGY STAR Performance Path” section and read as follows:</p> <p>“Partnership, Training, and Credentialing Requirements</p> <p>Builders, Raters, and HVAC contractors must meet the following requirements prior to qualifying homes under these guidelines:</p> <ul style="list-style-type: none"> • Builders are required to be ENERGY STAR partners and complete the online Version 3 Builder Orientation. Partnership Agreements and Version 3 Builder Orientation can be found at www.energystar.gov/homesPA. • HVAC contractors must be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO). An explanation of this process and links to H-QUITOs can be found at www.energystar.gov/newhomesHVAC. <p>Raters and Field Inspectors are required to complete Version 3 Training which can be found at www.resnet.us/energystar.”</p>
00162	01/15/2012	County-Level Reference Design, Climate Zone 1-8 (Version 3, Rev. 04)	Clarification	Conflicts with code or other external guidelines
				Issue: Partners have asked if Inspection Checklist requirements that are not included in a home because of a conflict with building codes should be included when determining if the home’s HERS Index is less than or equal to its ENERGY STAR HERS Index Target. For example, if a home is required to have slab edge insulation per Item 4.2 of the Thermal Enclosure System Rater Checklist, but slab edge insulation is prohibited by code, should the home be modeled with the missing insulation?
				Resolution: If a conflict with code or other external guidelines prevents a home from including an energy efficiency feature required by the Inspection Checklists, that feature cannot be used to help the home meet its ENERGY STAR HERS Index Target under the Performance Path. If modeling the home as it will be built, without the efficiency feature, causes it to fail, then additional upgrades must be used to compensate for the missing feature. To clarify this, Footnote 5 will be revised as follows:

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				<p>a. “In cases where the overlapping requirements exceed the ENERGY STAR guidelines, these overlapping requirements shall be met;</p> <p>“In cases where overlapping requirements conflict with a requirement of these ENERGY STAR guidelines (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these guidelines shall not be met. Qualification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement of these ENERGY STAR guidelines (e.g., switching from exterior to interior slab edge insulation). Note that, under the Performance Path, a home must still meet its ENERGY STAR HERS Index Target. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement.”</p>
00083	07/25/2011	County-Level Reference Design Documents (Version 3, Rev. 03)	Change	<p>Program eligibility – Harmonizing requirements with Multifamily High-Rise Program</p>
				<p>Issue: EPA has recently launched its ENERGY STAR Multifamily High Rise Program. The eligibility requirements of the ENERGY STAR for New Homes Program need to be harmonized with the eligibility requirements of that new program.</p>
				<p>Resolution: The eligibility requirements on page one of the County-Level Reference Design documents will be revised as follows:</p> <p>“To earn the ENERGY STAR under the Version 3 Guidelines, homes must be one of the following:</p> <ul style="list-style-type: none"> • “Single family homes; OR • “Units in any multifamily building with 4 units or fewer; OR • “Units in multifamily buildings with 3 stories or fewer above-grade^{1,2}; OR • “Units in multifamily buildings with 4 or 5 stories above-grade^{1,2} that have their own heating, cooling, and hot water systems³, separate from other units, and where dwelling units occupy 80% or more of the occupiable² square footage of the building.⁴ When evaluating mixed-use buildings for eligibility, exclude commercial / retail space when assessing whether the 80% threshold has been met. <p>“Units in multifamily buildings that are not eligible for the ENERGY STAR through the New Homes program may be eligible to qualify through the Multifamily High Rise Program.</p> <p>The associated footnotes are as follows:</p> <ol style="list-style-type: none"> 1. “Any above-grade story with 20% or more occupiable space, including commercial space, shall be counted towards the total number of stories for the purpose of determining eligibility to participate in the program. The definition of an ‘above-grade story’ is one for which more than half of the gross surface area of the exterior walls is above-grade. All below-grade stories, regardless of type, shall not be included when evaluating eligibility. 2. “Per ASHRAE 62.2-2010, occupiable space is any enclosed space inside the pressure

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				<p>boundary and intended for human activities or continual human occupancy, including, but not limited to, areas used for living, sleeping, dining, and cooking, toilets, closets, halls, storage and utility areas, and laundry areas.</p> <p>3. “Central systems for domestic hot water are allowed if solar energy provides at least 50% of the domestic hot water needs for the residential units.</p> <p>4. “Units in multifamily buildings with 4 or 5 stories above-grade, including mixed-use buildings, that have their own heating, cooling, and hot water systems, separate from other units, <i>but where dwelling units occupy less than 80%</i> of the residential (i.e., excluding commercial / retail space for mixed-use buildings) occupiable square footage of the building may qualify for the ENERGY STAR through either the New Homes program or the Multifamily High Rise program if permitted prior to July 1, 2012. Units in buildings of this type that are permitted after this date shall only be eligible to earn the ENERGY STAR through the Multifamily High Rise (MFHR) program.”</p>
00084	07/25/2011	County-Level Reference Design Documents (Version 3, Rev. 03)	Change	<p>Determining gross basement wall area</p> <p>Issue: Partners have expressed difficulty determining the percentage of gross basement wall area that is below grade when walls are not in contact with either the ground or outdoor ambient air. This occurs, for example, when a wall separates the basement spaces of adjacent townhome units.</p> <p>Response: EPA intended to exclude walls that are not in contact with either the ground or outdoor ambient air because of the difficulty of determining the area of the above-grade and below-grade portions of those walls.</p> <p>The beginning of Footnote 4 will be revised to read as follows: “To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above).”</p>
00085	07/25/2011	County-Level Reference Design Documents (Version 3, Rev. 03)	Change	<p>Basement exclusion from Size Adjustment Factor</p> <p>Issue: Partners have asked EPA to allow bedrooms in basements to be included when determining the Benchmark Home Size. In the rare instances where the majority of bedrooms in a home are located in the basement, excluding these bedrooms can result in the application of a significant Size Adjustment Factor, resulting in a meaningfully more stringent ENERGY STAR HERS Index Target.</p> <p>Response: To eliminate this hardship for these homes, EPA will now allow all bedrooms in the home to be counted when determining the Benchmark Home Size, regardless of location.</p> <p>This policy change will result in the same or less stringent target for all Partners. Note that no change is being made to EPA’s policy of excluding floor area in basements with at least half of the gross surface area of the exterior walls below grade. That is to say, floor area in basements with at least half of the gross surface area of the basement’s exterior walls below</p>

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				<p>grade shall not be counted when determining a home's Benchmark Home Size, Size Adjustment Factor, and eligibility to use the Prescriptive Path.</p> <ul style="list-style-type: none"> Step 1 of the County-Level Reference Design documents will be revised as follows: "First, assess the eligibility to follow the Prescriptive Path by comparing the conditioned floor area (CFA) of the home to be built to the CFA of the Benchmark Home as specified in Exhibit 3. For the purposes of this step, calculate the number of bedrooms and the CFA of the home to be built using RESNET standards with the following exception: floor area in basements with at least half of the gross surface area of the basement's exterior walls below grade shall not be counted. If the CFA of the home to be built exceeds the CFA of the Benchmark Home, then the Performance Path shall be used. See www.energystar.gov/newhomesguidelines for more information on the Performance Path. Footnote 4 will be revised as follows: "To determine whether at least half of the basement wall area is below grade, use the gross surface area of the walls that are in contact with either the ground or ambient outdoor air, measured from the basement floor to the bottom of the basement ceiling framing (e.g., the bottom of the joists for the floor above). Note that this change is only for the purpose of determining a home's Benchmark Home Size, Size Adjustment Factor, and eligibility to use the Prescriptive Path. The full conditioned floor area, per RESNET's standards, should be used when rating the home (e.g., determining compliance with duct leakage requirements). If a home has zero bedrooms with regard to the Benchmark Home Size determination, then the Benchmark Home Size for one bedroom shall be used."
00086	07/25/2011	County-Level Reference Design Documents (Version 3, Rev. 03)	Refinement	ENERGY STAR Prescriptive Path errata
				<p>Issue: EPA has identified a minor typographical error in Step 1 of the Prescriptive Path in the county-level reference design documents: "First, assess the eligibility to follow the Prescriptive Path by comparing the conditioned floor area (CFA) of the home to [be] built to the CFA of the Benchmark Home as specified in Exhibit 2."</p> <p>Additionally, "Prescriptive Path" is not consistently capitalized in the county-level reference design documents. Particularly in Footnote 14, this error creates some confusion as to what "prescriptive path" refers to.</p>
				<p>Resolution: The phrase, "to built..." in Step 1 of the Prescriptive Path will be revised to "to be built..." References to the Prescriptive Path have been capitalized throughout the county-level reference design documents.</p>
00161	01/15/2012	County-Level Reference Design, Climate Zone 1-8 (Version 3, Rev. 04)	Refinement	Prescriptive Path - ENERGY STAR qualified lighting
				<p>Issue: The terminology related to ENERGY STAR qualified light bulbs has changed such that partners looking for ENERGY STAR qualified CFLs, LEDs, or pin-based lighting should now look for ENERGY STAR qualified light bulbs or fixtures.</p>

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				<p>Resolution: To align terminology across programs, and to encourage partners to use ENERGY STAR qualified light fixtures in addition to qualified light bulbs, the Lighting & Appliances section will be revised to read in part:</p> <p>“ENERGY STAR qualified light bulbs or fixtures shall be installed in 80% of RESNET-defined Qualifying Light Fixture Locations.”</p>
00160	01/15/2012	County-Level Reference Design Climate Zones 1-8 (Version 3, Rev. 04)	Change	<p>Total duct leakage limits</p> <p>Issue: Partners have expressed difficulty meeting the total duct leakage limit for homes with at least 1,200 sq. ft. of conditioned floor area (i.e., 6 CFM25 per 100 sq. ft. of conditioned floor area). Partners have provided feedback that this threshold is most challenging to achieve where building cavities are used as ducts and where ducts and air handlers are not completely sealed with mastic. For fully ducted and sealed systems, partners have indicated that they can consistently approach the threshold but that meaningfully more effort is required to move from just above the threshold (e.g., 8 CFM25 per 100 sq. ft. of conditioned floor area) to the threshold of 6 CFM25 per 100 sq. ft. of conditioned floor area.</p> <p>Resolution: To address partners’ difficulties meeting the total duct leakage limit, the total duct leakage limit will be revised as follows: “Total duct leakage ≤ 8 CFM25 per 100 sq. ft. of conditioned area.” Because the total duct leakage threshold is not being changed for homes with less than 1,200 sq. ft. of conditioned floor area, there is no different threshold for those homes.</p> <p>Footnote 22 will be shortened to only include guidance related to duct leakage testing protocols: “Duct leakage shall be determined and documented by a Rater using a RESNET-approved testing protocol only after all components of the system have been installed (e.g., air handler and register grilles). Leakage limits shall be assessed on a per-system, rather than per-home, basis.”</p> <p>Remaining guidance related to testing duct leakage to the outside will be consolidated in Footnote 23, which will read as follows:</p> <p>“For homes that have ≤ 1,200 sq. ft. of conditioned floor area, measured duct leakage to outdoors shall be ≤ 5 CFM25 per 100 sq. ft. of conditioned floor area. Testing of duct leakage to the outside can be waived if all ducts & air handling equipment are located within the home’s air and thermal barriers AND envelope leakage has been tested to be less than or equal to half of the Prescriptive Path infiltration limit for the Climate Zone where the home is to be built. Alternatively, testing of duct leakage to the outside can be waived if total duct leakage is ≤ 4 CFM25 per 100 sq. ft. of conditioned floor area, or ≤ 5 CFM25 per 100 sq. ft. of conditioned floor area for homes that have less than 1,200 sq. ft. of conditioned floor area.”</p>
				<p>Footnote 10 – Slab framing systems</p> <p>Issue: Partners have asked EPA to define the phrase “slab framing system” in Footnote 10 of</p>
00087	07/25/2011	County-Level Reference Design	Refinement	

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		Documents (Version 3, Rev. 03)		the County-Level Reference Design documents. Response: This footnote will be revised to read as follows: “Insulation shall be verified by a Rater to achieve Grade I installation as defined in the RESNET Standards, except for ceiling, wall, and floor assemblies with continuous rigid insulation sheathing. For such homes, Grade II installation is acceptable for the cavity insulation only if the rigid insulation sheathing meets or exceeds the following levels: R-3 in Climate Zones 1 to 4; R-5 in Zones 5 to 8.”
00088	07/25/2011	County-Level Reference Design Documents (Version 3, Rev. 03)	Refinement	Footnotes 11d and 12d – Insulation levels for steel-frame assemblies Issue: Partners have advised that the county-level reference design documents reference erroneous guidance contained in the 2009 IECC related to the UA calculation for a steel-frame envelope assembly. Resolution: Footnote 12d in the County-Level Reference Designs for Climate Zones 1-3 and Footnote 11d in the County-Level reference Designs for Climate Zones 4-8 have been revised to read as follows: “...The calculation for a steel-frame envelope assembly shall use the ASHRAE zone method or a method providing equivalent results, and not a series-parallel path calculation method.”
00163	01/15/2012	County-Level Reference Design, Climate Zone 1-3 (Version 3, Rev. 04)	Clarification	Footnote 17d - Minimum insulation requirements when using a total UA calculation Issue: Partners have asked whether the insulation requirements specified in Item 4.1 of the Thermal Enclosure System Rater Checklist apply to the attic edge only or the entire attic, noting that Footnote 10d states, in part, that “while ceiling and slab insulation can be included in trade-off calculations, the R-value must meet or exceed the minimum values listed in Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist to provide an effective thermal break, regardless of the UA tradeoffs calculated.” Resolution: To clarify that Inspection Checklist Item 4.1 defines minimum insulation levels that must be achieved specifically at the interior face of the exterior wall and not throughout the attic, Footnote 17d will be revised as follows: “...Also, note that while ceiling and slab insulation can be included in trade-off calculations, Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist shall be met regardless of the UA tradeoffs calculated...”
00089	07/25/2011	County-Level Reference Design: Climate Zone 4 (Version 3, Rev. 03)	Refinement	Climate Zone 4 Reference Design errata Issue: Partners have noted that the Revision 02 County Level Reference Design for Climate Zone 4 contains several inconsistencies with the National ENERGY STAR Reference Design requirements. Response: The window U-value, window SHGC, and cooling efficiency requirements will be aligned with the national guidelines as follows: <ul style="list-style-type: none"> • Windows: ≤ 0.32 U-Value; 0.40 SHGC • If total window-to-floor area $>15\%$, then U-values or SHGCs adjusted as outlined in

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				<p>Footnote 14.</p> <ul style="list-style-type: none"> • Cooling equipment: ≥ 13 SEER AC; OR • ≥ 8.5 HSPF / 14.5 SEER / 12 EER ENERGY STAR qualified air-source heat pump with electric backup; OR • ≥ 8.2 HSPF / 14.5 SEER / 12 EER ENERGY STAR qualified air-source heat pump with ENERGY STAR qualified dual-fuel backup; OR • Ground source heat pump, any product type, ENERGY STAR qualified.
00164	01/15/2012	County-Level Reference Design, Climate Zone 4-8 (Version 3, Rev. 04)	Clarification	<p>Prescriptive Path – Heating equipment efficiencies</p> <p>Issue: The minimum efficiency requirements for ENERGY STAR qualified gas furnaces manufactured after 02/01/2012 will increase from 90 AFUE to 95 AFUE for the U.S. North region, defined as states with population-weighted Heating Degree Days ≥ 5000. The ENERGY STAR Product Specification for Furnaces, Version 3.0 specifies which states are included in the U.S. North region.</p> <p>The ENERGY STAR Reference Design defined in Exhibit 1 currently requires an ENERGY STAR qualified 90 AFUE furnace in Climate Zones 4 through 8. Partners have asked how this will be modified to account for the new ENERGY STAR product specification for furnaces.</p> <p>Resolution: The ENERGY STAR for Homes guidelines will not be modified at this time to align with the more stringent efficiency level required in the new ENERGY STAR product specification for furnaces. The minimum efficiency level specified for gas furnaces in Climate Zones 4 through 8 under the Prescriptive Path and Exhibit 2 of the ENERGY STAR HERS Index Target Procedure will remain at 90 AFUE. The minimum requirement for gas furnaces in Climate Zones 4 through 8 in Exhibit 1 of the National Program Requirements will be revised by removing the phrase “ENERGY STAR qualified”.</p>
				<p>Footnote 16d - Minimum insulation requirements when using a total UA calculation</p> <p>Issue: Partners have asked whether the insulation requirements specified in Item 4.1 of the Thermal Enclosure System Rater Checklist apply to the attic edge only or the entire attic, noting that Footnote 10d states, in part, that “while ceiling and slab insulation can be included in trade-off calculations, the R-value must meet or exceed the minimum values listed in Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist to provide an effective thermal break, regardless of the UA tradeoffs calculated.”</p> <p>Resolution: To clarify that Inspection Checklist Item 4.1 defines minimum insulation levels that must be achieved specifically at the interior face of the exterior wall and not throughout the attic, Footnote 16d will be revised as follows: “...Also, note that while ceiling and slab insulation can be included in trade-off calculations, Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist shall be met regardless of the UA tradeoffs calculated...”</p>
00165	01/15/2012	County-Level Reference Design, Climate Zone 4-8 (Version 3, Rev. 04)	Clarification	

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00090	07/25/2011	National Program Requirements (Version 2.5, Rev. 03)	Clarification	<div data-bbox="875 198 2011 235">Exhibit 2, Footnote 3 – Timeline for low-income projects</div> <p data-bbox="875 241 2011 305">Issue: Partners have asked EPA to clarify several aspects of the extended Version 2 timeline for low-income projects financed through low-income housing agencies, including the following:</p> <ul data-bbox="926 311 2011 488" style="list-style-type: none"> • What kind of organization qualifies as a “low-income housing agency”? • What kind of financial support qualifies as “funding”? • How should builders and developers document when funding applications are received by funding agencies? • What is the overall intent of the extended Version 2 timeline for this kind of project? <p data-bbox="875 495 2011 591">Response: By “low-income housing agency,” EPA means any entity that provides public funding to nonprofit builders and developers for the construction of housing projects specifically for low-income tenants.</p> <p data-bbox="875 597 2011 722">By “funding,” EPA means public funding such as public grants or Low Income Housing Tax Credit (LIHTC) funds. The funding must be critical to the project financing, such as financing land acquisition, infrastructure, or construction. Funding intended for noncritical activities, such as for providing mortgage financing to homebuyers, does not qualify for the extended timeline.</p> <p data-bbox="875 729 2011 1125">It is the responsibility of the funding applicant (the developer and builder) to keep on file written proof that they applied for public funds for use in constructing a low-income housing project to be ENERGY STAR qualified under Version 2. This documentation should identify the funding agency and the date when the funding application was received by the funding agency. This could be a copy of the funding application itself that has been date stamped by the funding agency. If there is no documentation that indicates when the funding application was received by the funding agency, there should at least be documentation that indicates when the funding application was sent to the funding agency by the funding applicant. It is the responsibility of the developer and builder to make this documentation available to the Rater (as well as to EPA upon request) so the Rater can verify whether or not the housing project qualifies for this exemption to the national Version 3 implementation timeline. Also, the builder or developer is responsible for providing to the Rater (as well as EPA upon request) a copy of documentation that shows that the funding was awarded prior to completion of the housing project.</p> <p data-bbox="875 1131 2011 1404">The intent of the low-income housing exemption to the national Version 3 implementation timeline is to give nonprofit low-income housing builders and developers additional time to build homes to earn the ENERGY STAR label under Version 2 with the understanding that low-income housing projects typically require some form of public funding in order to be constructed and that the process for obtaining public funding typically adds time to the build-out timeline. EPA decided to provide this exemption based on when the funding application was received as opposed to when the application was approved or when funding was actually received in order to avoid penalizing nonprofit low-income housing developers and builders for delays caused by the funding agency in reviewing and approving funding applications.</p>
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00091	07/25/2011	National Program Requirements (Version 2.5, Rev. 03)	Comment	Performance Path – Exhaust fan requirements
				Issue: Partners have asked whether ENERGY STAR labeled exhaust fans must be used in homes qualified under the Performance Path in ENERGY STAR Version 2.5.
				Resolution: When qualifying a home under Version 2.5 using the Performance Path, ENERGY STAR labeled exhaust fans are not required.
00166	01/15/2012	California Program Requirements (Version 2.5, Rev. 01)	Clarification	Conflicts with code or other external guidelines
				Issue: Partners have asked if Inspection Checklist requirements that are not included in a home because of a conflict with building codes should be included when determining if the home's performance meets or exceeds the California 2008 Building Energy Efficiency Standards requirements by 15%. For example, if a home is required to have slab edge insulation per Item 4.2 of the Thermal Enclosure System Rater Checklist, but slab edge insulation is prohibited by code, should the home be modeled with the missing insulation?
				<p>Resolution: If a conflict with code or other external guidelines prevents a home from including an energy efficiency feature required by the Inspection Checklists, that feature cannot be used to help the home meet or exceed the California 2008 Building Energy Efficiency Standards requirements by 15%. If modeling the home as it will be built, without the efficiency feature, causes it to fail, then additional upgrades must be used to compensate for the missing feature. To clarify this, Footnote 5 will be revised as follows:</p> <p>a. "In cases where the overlapping requirements exceed the ENERGY STAR guidelines, these overlapping requirements shall be met;</p> <p>"In cases where overlapping requirements conflict with a requirement of these ENERGY STAR guidelines (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these guidelines shall not be met. Qualification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement of these ENERGY STAR guidelines (e.g., switching from exterior to interior slab edge insulation). Note that, under the Performance Path, a home must still meet or exceed the California 2008 Building Energy Efficiency Standards requirements by 15%. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement."</p>
00167	01/15/2012	California Program Requirements (Version 3, Rev. 01)	Clarification	Conflicts with code or other external guidelines
				Issue: Partners have asked if Inspection Checklist requirements that are not included in a home because of a conflict with building codes should be included when determining if the home's performance meets or exceeds the California 2008 Building Energy Efficiency Standards requirements by 15%. For example, if a home is required to have slab edge insulation per Item 4.2 of the Thermal Enclosure System Rater Checklist, but slab edge insulation is prohibited by code, should the home be modeled with the missing insulation?

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				<p>Resolution: If a conflict with code or other external guidelines prevents a home from including an energy efficiency feature required by the Inspection Checklists, that feature cannot be used to help the home meet or exceed the California 2008 Building Energy Efficiency Standards requirements by 15%. If modeling the home as it will be built, without the efficiency feature, causes it to fail, then additional upgrades must be used to compensate for the missing feature. To clarify this, Footnote 5 will be revised as follows:</p> <p>a. “In cases where the overlapping requirements exceed the ENERGY STAR guidelines, these overlapping requirements shall be met;</p> <p>“In cases where overlapping requirements conflict with a requirement of these ENERGY STAR guidelines (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these guidelines shall not be met. Qualification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement of these ENERGY STAR guidelines (e.g., switching from exterior to interior slab edge insulation). Note that, under the Performance Path, a home must still meet or exceed the California 2008 Building Energy Efficiency Standards requirements by 15%. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement.”</p>
00168	01/15/2012	California Program Requirements (Version 3, Rev. 01)	Clarification	<p>Partnership, Training, and Credentialing Requirements</p>
				<p>Issue: Partners have asked for clarification about the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes.</p>
				<p>Resolution: A section will be added to clarify the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes. This new section will appear after the “ENERGY STAR Performance Path” section and will read as follows:</p> <p>“Partnership, Training, and Credentialing Requirements</p> <p>Builders, Raters, and HVAC contractors must meet the following requirements prior to qualifying homes under these guidelines:</p> <ul style="list-style-type: none"> • Builders are required to be ENERGY STAR partners and complete the online Version 3 Builder Orientation. Partnership Agreements and Version 3 Builder Orientation can be found at www.energystar.gov/homesPA. • HVAC contractors must be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO). An explanation of this process and links to H-QUITOs can be found at www.energystar.gov/newhomesHVAC. <p>Raters and Field Inspectors are required to complete Version 3 Training which can be found at www.resnet.us/energystar.”</p>

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00172	01/15/2012	Florida Program Requirements (Version 3, Rev. 02)	Clarification	Partnership, Training, and Credentialing Requirements
				<p>Issue: Partners have asked for clarification about the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes.</p> <p>Resolution: A section will be added to clarify the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes. This new section will appear after the “ENERGY STAR Performance Path” section and will read as follows: “Partnership, Training, and Credentialing Requirements Builders, Raters, and HVAC contractors must meet the following requirements prior to qualifying homes under these guidelines:</p> <ul style="list-style-type: none"> • Builders are required to be ENERGY STAR partners and complete the online Version 3 Builder Orientation. Partnership Agreements and Version 3 Builder Orientation can be found at www.energystar.gov/homesPA. • HVAC contractors must be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO). An explanation of this process and links to H-QUITOs can be found at www.energystar.gov/newhomesHVAC. <p>Raters and Field Inspectors are required to complete Version 3 Training which can be found at www.resnet.us/energystar.”</p>
00170	01/15/2012	Florida Program Requirements (Version 3, Rev. 02)	Clarification	Conflicts with code or other external guidelines
				<p>Issue: Partners have asked if Inspection Checklist requirements that are not included in a home because of a conflict with building codes should be included when determining if the home’s HERS Index is less than or equal to its ENERGY STAR HERS Index Target. For example, if a home is required to have slab edge insulation per Item 4.2 of the Thermal Enclosure System Rater Checklist, but slab edge insulation is prohibited by code, should the home be modeled with the missing insulation?</p> <p>Resolution: If a conflict with code or other external guidelines prevents a home from including an energy efficiency feature required by the Inspection Checklists, that feature cannot be used to help the home meet its ENERGY STAR HERS Index Target under the Performance Path. If modeling the home as it will be built, without the efficiency feature, causes it to fail, then additional upgrades must be used to compensate for the missing feature. To clarify this, Footnote 5 will be revised as follows:</p> <p>a. “In cases where the overlapping requirements exceed the ENERGY STAR guidelines, these overlapping requirements shall be met;</p> <p>“In cases where overlapping requirements conflict with a requirement of these ENERGY STAR guidelines (e.g., slab insulation is prohibited to allow visual access for termite inspections),</p>

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				then the conflicting requirement within these guidelines shall not be met. Qualification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement of these ENERGY STAR guidelines (e.g., switching from exterior to interior slab edge insulation). Note that, under the Performance Path, a home must still meet its ENERGY STAR HERS Index Target. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement.”
00169	01/15/2012	Florida Program Requirements (Version 3, Rev. 01)	Change	Whole-house mechanical ventilation
				Issue: Partners have noted that there is an inconsistency between Footnote 17, which reads “To ensure consistent exchange of indoor air, whole-house mechanical ventilation is recommended, but not required” and Section 1 of the HVAC System Quality Installation Contractor Checklist, which requires whole-house mechanical ventilation for all homes.
				Resolution: To correct the inconsistency between Footnote 17 and Section 1 of the HVAC System Quality Installation Contractor Checklist, Footnote 17 will be removed from the Version 3 Program Requirements for Florida. That document, along with the Version 2.5 and Version 3.1 Program Requirements for Florida and the Version 3.1 HERS Index Target Procedure for Florida, will all be re-posted and labeled as Revision 02 of the Florida guidelines. The sole change being made as part of Revision 02 to the Florida guidelines will be to remove Footnote 17 from the Version 3 Program Requirements for Florida.
00173	01/15/2012	Florida Program Requirements (Version 3, Rev. 02)	Change	Total duct leakage limits
				Issue: Partners have expressed difficulty meeting the total duct leakage limit for homes with at least 1,200 sq. ft. of conditioned floor area (i.e., 6 CFM25 per 100 sq. ft. of conditioned floor area). Partners have provided feedback that this threshold is most challenging to achieve where building cavities are used as ducts and where ducts and air handlers are not completely sealed with mastic. For fully ducted and sealed systems, partners have indicated that they can consistently approach the threshold but that meaningfully more effort is required to move from just above the threshold (e.g., 8 CFM25 per 100 sq. ft. of conditioned floor area) to the threshold of 6 CFM25 per 100 sq. ft. of conditioned floor area.
				Resolution: To address partners’ difficulties meeting the total duct leakage limit, the total duct leakage limit in the Ductwork section of Exhibit 1 will be revised as follows: “Total duct leakage ≤ 8 CFM25 per 100 sq. ft. of conditioned area.” Footnote 12 will be shortened to only include guidance related to duct leakage testing protocols: “Duct leakage shall be determined and documented by a Rater using a RESNET-approved testing protocol only after all components of the system have been installed (e.g., air handler and register grilles). Leakage limits shall be assessed on a per-system, rather than per-home, basis.” Remaining guidance related to testing duct leakage to the outside will be consolidated in Footnote 13, which will read as follows:

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				<p>“For homes that have $\leq 1,200$ sq. ft. of conditioned floor area, measured duct leakage to outdoors shall be ≤ 5 CFM25 per 100 sq. ft. of conditioned floor area. Testing of duct leakage to the outside can be waived if all ducts & air handling equipment are located within the home’s air and thermal barriers AND envelope leakage has been tested to be less than or equal to half of the Prescriptive Path infiltration limit for the Climate Zone where the home is to be built. Alternatively, testing of duct leakage to the outside can be waived if total duct leakage is ≤ 3 CFM25 per 100 sq. ft. of conditioned floor area, or ≤ 5 CFM25 per 100 sq. ft. of conditioned floor area for homes that have less than 1,200 sq. ft. of conditioned floor area.”</p>
00174	01/15/2012	Florida Program Requirements (Version 3, Rev. 02)	Change	<p>Prescriptive Path – Window and Skylight Requirements</p> <p>Issue: Partners have noted that Exhibit 1 requires windows and doors to achieve a U-value ≤ 0.52 and a SHGC ≤ 0.32. In contrast, Footnote 9 and Item 1.1 of the Thermal Enclosure System Rater Checklist indicate that windows and doors shall meet or exceed ENERGY STAR Program Requirements for Residential Windows, Doors, and Skylights – Version 5.0, which are more stringent. Furthermore, Footnote 17 states that all windows and skylights must be ENERGY STAR qualified or meet all specifications for ENERGY STAR qualified windows. As a result, there are conflicting requirements for the performance of windows and skylights.</p> <p>Resolution: To resolve the conflicting requirements for the performance of windows and skylights, the first sentence of Footnote 9 will be removed and Footnote 17 will be revised as follows: “For Prescriptive Path: Homes qualified under this version of the guidelines are not required to comply with Thermal Enclosure System Rater Checklist Item 1.1, which states that fenestration shall meet or exceed ENERGY STAR requirements. Raters are permitted to mark ‘N/A’ for this Checklist Item.”</p>
				<p>Prescriptive Path – ENERGY STAR qualified lighting</p> <p>Issue: The terminology related to ENERGY STAR qualified light bulbs has changed such that partners looking for ENERGY STAR qualified CFLs, LEDs, or pin-based lighting should now look for ENERGY STAR qualified light bulbs or fixtures.</p> <p>Resolution: To align with the terminology now used to describe ENERGY STAR qualified lighting products, the lighting requirement in the Florida Builder Option Package will be revised as follows: “Advanced Lighting Package (ALP) or ENERGY STAR qualified light bulbs or fixtures shall be installed in 60% of RESNET-defined Qualifying Light Fixture Locations”.</p>
				<p>Footnote 7d - Minimum insulation requirements when using a total UA calculation</p> <p>Issue: Partners have asked whether the insulation requirements specified in Item 4.1 of the Thermal Enclosure System Rater Checklist apply to the attic edge only or the entire attic, noting that Footnote 10d states, in part, that “while ceiling and slab insulation can be included in trade-off calculations, the R-value must meet or exceed the minimum values listed in Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist to provide an effective</p>
00175	01/15/2012	Florida Program Requirements (Version 3, Rev. 02)	Refinement	
00171	01/15/2012	Florida Program Requirements (Version 3, Rev. 02)	Clarification	

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				thermal break, regardless of the UA tradeoffs calculated.”
				Resolution: To clarify that Inspection Checklist Item 4.1 defines minimum insulation levels that must be achieved specifically at the interior face of the exterior wall and not throughout the attic, Footnote 7d will be revised as follows: “...Also, note that while ceiling and slab insulation can be included in trade-off calculations, Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist shall be met regardless of the UA tradeoffs calculated...”
00176	01/15/2012	Florida Program Requirements (Version 3.1, Rev. 02)	Clarification	Partnership, Training, and Credentialing Requirements
				Issue: Partners have asked for clarification about the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes.
				<p>Resolution: A section will be added to clarify the partnership, training, and credentialing requirements for builders, Raters, and HVAC contractors working on ENERGY STAR qualified homes. This new section will appear after the “ENERGY STAR Performance Path” section and read as follows:</p> <p>“Partnership, Training, and Credentialing Requirements</p> <p>Builders, Raters, and HVAC contractors must meet the following requirements prior to qualifying homes under these guidelines:</p> <ul style="list-style-type: none"> • Builders are required to be ENERGY STAR partners and complete the online Version 3 Builder Orientation. Partnership Agreements and Version 3 Builder Orientation can be found at www.energystar.gov/homesPA. • HVAC contractors must be credentialed by an EPA-recognized HVAC Quality Installation Training and Oversight Organization (H-QUITO). An explanation of this process and links to H-QUITOs can be found at www.energystar.gov/newhomesHVAC. <p>Raters and Field Inspectors are required to complete Version 3 Training which can be found at www.resnet.us/energystar.”</p>
00177	01/15/2012	Florida Program Requirements (Version 3.1, Rev. 02)	Clarification	Conflicts with code or other external guidelines
				Issue: Partners have asked if Inspection Checklist requirements that are not included in a home because of a conflict with building codes should be included when determining if the home’s HERS Index is less than or equal to its ENERGY STAR HERS Index Target. For example, if a home is required to have slab edge insulation per Item 4.2 of the Thermal Enclosure System Rater Checklist, but slab edge insulation is prohibited by code, should the home be modeled with the missing insulation?
				Resolution: If a conflict with code or other external guidelines prevents a home from including an energy efficiency feature required by the Inspection Checklists, that feature cannot be used to help the home meet its ENERGY STAR HERS Index Target under the Performance Path. If

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				<p>modeling the home as it will be built, without the efficiency feature, causes it to fail, then additional upgrades must be used to compensate for the missing feature. To clarify this, Footnote 5 will be revised as follows:</p> <p>a. “In cases where the overlapping requirements exceed the ENERGY STAR guidelines, these overlapping requirements shall be met;</p> <p>“In cases where overlapping requirements conflict with a requirement of these ENERGY STAR guidelines (e.g., slab insulation is prohibited to allow visual access for termite inspections), then the conflicting requirement within these guidelines shall not be met. Qualification shall only be allowed if the Rater has determined that no equivalent option is available that could meet the intent of the conflicting requirement of these ENERGY STAR guidelines (e.g., switching from exterior to interior slab edge insulation). Note that, under the Performance Path, a home must still meet its ENERGY STAR HERS Index Target. Therefore, other efficiency measures may be needed to compensate for the omission of the conflicting requirement.”</p>
00178	01/15/2012	Florida Program Requirements (Version 3.1, Rev. 02)	Clarification	Footnote 10d - Minimum insulation requirements when using a total UA calculation
				<p>Issue: Partners have asked whether the insulation requirements specified in Item 4.1 of the Thermal Enclosure System Rater Checklist apply to the attic edge only or the entire attic, noting that Footnote 10d states, in part, that “while ceiling and slab insulation can be included in trade-off calculations, the R-value must meet or exceed the minimum values listed in Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist to provide an effective thermal break, regardless of the UA tradeoffs calculated.”</p>
				<p>Resolution: To clarify that Inspection Checklist Item 4.1 defines minimum insulation levels that must be achieved specifically at the interior face of the exterior wall and not throughout the attic, Footnote 10d will be revised as follows: “...Also, note that while ceiling and slab insulation can be included in trade-off calculations, Items 4.1 through 4.3 of the Thermal Enclosure System Rater Checklist shall be met regardless of the UA tradeoffs calculated...”</p>
00179	01/15/2012	Florida Program Requirements (Version 3.1, Rev. 02)	Change	Total duct leakage limits
				<p>Issue: Partners have expressed difficulty meeting the total duct leakage limit for homes with at least 1,200 sq. ft. of conditioned floor area (i.e., 6 CFM25 per 100 sq. ft. of conditioned floor area). Partners have provided feedback that this threshold is most challenging to achieve where building cavities are used as ducts and where ducts and air handlers are not completely sealed with mastic. For fully ducted and sealed systems, partners have indicated that they can consistently approach the threshold but that meaningfully more effort is required to move from just above the threshold (e.g., 8 CFM25 per 100 sq. ft. of conditioned floor area) to the threshold of 6 CFM25 per 100 sq. ft. of conditioned floor area.</p>
				<p>Resolution: To address partners’ difficulties meeting the total duct leakage limit, the total duct leakage limit in the Thermostat & Ductwork section of Exhibit 1 will be revised as follows: “Total duct leakage ≤ 8 CFM25 per 100 sq. ft. of CFA.” Additionally, because the total duct leakage</p>

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				threshold will now be the same for all homes, Footnote 22 will be removed.
00180	01/15/2012	Florida Program Requirements (Version 3.1, Rev. 02)	Refinement	Prescriptive Path – ENERGY STAR qualified lighting
				Issue: The terminology related to ENERGY STAR qualified light bulbs has changed such that partners looking for ENERGY STAR qualified CFLs, LEDs, or pin-based lighting should now look for ENERGY STAR qualified light bulbs or fixtures.
				Resolution: To align with the terminology now used to describe ENERGY STAR qualified lighting products, the lighting requirement in the ENERGY STAR Reference Design will be revised as follows: “ENERGY STAR qualified light bulbs or fixtures shall be installed in 80% of RESNET-defined Qualifying Light Fixture Locations.”
00181	01/15/2012	National Program Requirements (Version 2.5, Rev. 04)	Change	Total duct leakage limits
				Issue: Partners have expressed difficulty meeting the total duct leakage limit for homes with at least 1,200 sq. ft. of conditioned floor area (i.e., 6 CFM25 per 100 sq. ft. of conditioned floor area). Partners have provided feedback that this threshold is most challenging to achieve where building cavities are used as ducts and where ducts and air handlers are not completely sealed with mastic. For fully ducted and sealed systems, partners have indicated that they can consistently approach the threshold but that meaningfully more effort is required to move from just above the threshold (e.g., 8 CFM25 per 100 sq. ft. of conditioned floor area) to the threshold of 6 CFM25 per 100 sq. ft. of conditioned floor area.
				Resolution: To address partners’ difficulties meeting the total duct leakage limit, the total duct leakage limit for Version 3 will be revised as follows: “≤ 8 CFM25 per 100 ft ² of CFA”
00182	01/15/2012	National Program Requirements (Version 2.5, Rev. 04)	Refinement	Exhibit 1 – Terminology related to Performance Path requirements
				Issues: Partners have noted that the description of the Performance Path requirements in Exhibit 1 of this document do not align with the terminology used in other program documents.
				Resolution: To align the terminology used in this document with that used in other program documents, the Version 2 Performance Path summary will be revised to read, “Fixed HERS Index Target” and the Version 2.5 and Version 3 summary will be revised to read, “Variable HERS Index Target.”
00183	01/15/2012	National Program Requirements (Version 2.5, Rev. 04)	Refinement	Version 3 Training and Credentialing Timeline
				Issue: Partners have asked for clarification about the dates by which builders must have completed the Version 3 Online Builder Orientation and HVAC contractors must be credentialed by an EPA-recognized oversight organization.
				Resolution: To more clearly explain the dates by which builders must have completed the Version 3 Online Builder Orientation and HVAC contractors must be credentialed by an EPA-recognized oversight organization, the third paragraph of the Version 2.5 National Program Requirements will be revised to read as follows: “While Raters will be required to complete

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				Version 3 training provided by RESNET-accredited training providers by January 1, 2012 to qualify homes under Version 3, it is recommended, but not required, that Raters participate in this training prior to completing the inspection checklists under Version 2.5. Similarly, while builders will be required to complete training provided by EPA by January 1, 2012 and HVAC contractors will be required to complete training provided through industry associations by January 1, 2012 to complete the HVAC System Quality Installation Contractor Checklist, it is recommended, but not required, that these parties also participate in this training prior to completing their respective Inspection Checklists"
00184	01/15/2012	National Program Requirements (Version 2.5, Rev. 04)	Refinement	Prescriptive Path – ENERGY STAR qualified lighting
				Issue: The terminology related to ENERGY STAR qualified light bulbs has changed such that partners looking for ENERGY STAR qualified CFLs, LEDs, or pin-based lighting should now look for ENERGY STAR qualified light bulbs.
				Resolution: To align terminology across programs, and to encourage partners to use ENERGY STAR qualified light fixtures in addition to qualified light bulbs, the Lighting & Appliances section will be revised to read in part: "ENERGY STAR qualified light bulbs or fixtures shall be installed in 80% of RESNET-defined Qualifying Light Fixture Locations." This change also applies to the County-Level Reference Design for all Climate Zones and the Version 3 National Program Requirements.
00092	07/25/2011	Florida Program Requirements (Version 2.5, Rev. 03)	Clarification	Footnote 3 – Timeline for low-income projects
				Issue: Partners have asked EPA to clarify several aspects of the extended Version 2 timeline for low-income projects financed through low-income housing agencies, including the following: <ul style="list-style-type: none"> • What kind of organization qualifies as a "low-income housing agency"? • What kind of financial support qualifies as "funding"? • How should builders and developers document when funding applications are received by funding agencies? • What is the overall intent of the extended Version 2 timeline for this kind of project?
				Response: By "low-income housing agency," EPA means any entity that provides public funding to nonprofit builders and developers for the construction of housing projects specifically for low-income tenants. By "funding," EPA means public funding such as public grants or Low Income Housing Tax Credit (LIHTC) funds. The funding must be critical to the project financing, such as financing land acquisition, infrastructure, or construction. Funding intended for noncritical activities, such as for providing mortgage financing to homebuyers, does not qualify for the extended timeline. It is the responsibility of the funding applicant (the developer and builder) to keep on file written

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				<p>proof that they applied for public funds for use in constructing a low-income housing project to be ENERGY STAR qualified under Version 2. This documentation should identify the funding agency and the date when the funding application was received by the funding agency. This could be a copy of the funding application itself that has been date stamped by the funding agency. If there is no documentation that indicates when the funding application was received by the funding agency, there should at least be documentation that indicates when the funding application was sent to the funding agency by the funding applicant. It is the responsibility of the developer and builder to make this documentation available to the Rater (as well as to EPA upon request) so the Rater can verify whether or not the housing project qualifies for this exemption to the national Version 3 implementation timeline. Also, the builder or developer is responsible for providing to the Rater (as well as EPA upon request) a copy of documentation that shows that the funding was awarded prior to completion of the housing project.</p> <p>The intent of the low-income housing exemption to the national Version 3 implementation timeline is to give nonprofit low-income housing builders and developers additional time to build homes to earn the ENERGY STAR label under Version 2 with the understanding that low-income housing projects typically require some form of public funding in order to be constructed and that the process for obtaining public funding typically adds time to the build-out timeline. EPA decided to provide this exemption based on when the funding application was received as opposed to when the application was approved or when funding was actually received in order to avoid penalizing nonprofit low-income housing developers and builders for delays caused by the funding agency in reviewing and approving funding applications.</p>
00185	01/15/2012	National Performance Path (Version 2)	Comment	Duct insulation levels
				Issue: Partners have asked what minimum insulation level is required for supply ducts in unconditioned space.
				Resolution: While EPA recommends that all supply ducts in unconditioned space be insulated, there is no mandatory requirement to insulate them under Version 2 of the National Performance Path.
00093	07/25/2011	Thermal Bypass Inspection Checklist (Version 2)	Clarification	Use of infrared thermography
				Issue: Partners have asked if infrared thermography can be used to complete the Thermal Bypass Checklist.
				<p>Resolution: The Thermal Bypass Inspection Checklist permits alternative methods of meeting the checklist requirements to be used if the Provider deems them to be equivalent, or more stringent, than the Inspection Checklist guidelines.</p> <p>At their discretion, Providers are permitted to allow their Raters to use IR thermography to complete relevant portions of the Thermal Bypass Inspection Checklist for homes qualified under Version 2 of the program. EPA recommends, but does not require, that RESNET's Interim Guidelines for Thermographic Inspections of Buildings be used. Regardless of the</p>

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				<p>method used, the Rater and Provider are the parties responsible for verifying that the requirements of the checklist have been completed.</p> <p>Note that EPA is evaluating its policy regarding the use of IR thermography for homes qualified under Version 2.5 and Version 3 of the program, given the increased requirements under these versions and the pending finalization of RESNET's Guidelines for Thermographic Inspections of Buildings.</p>
00094	07/25/2011	Thermal Bypass Inspection Checklist (Version 2)	Comment	Item 5.4 – Recessed lighting fixtures
				Issue: EPA was asked whether insulation contact-rated lights that are not also rated as air-tight can fulfill the intent of Item 5.4, "ICAT labeled and sealed to drywall," if all penetrations are sealed with heat-resistant tape or foam.
				Resolution: Light fixtures that are not ICAT rated but are IC rated and appear to be air tight by visual inspection or have product labeling that implies air tightness do not meet the intent of Item 5.4. A visual inspection for air tightness is not the equivalent to an ICAT label. Also, given the low cost differential between ICAT labeled fixtures and IC labeled fixtures that appear air tight, there is little justification for such an allowance.